Chemical Week

July 13, 1957

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Shortage of technical manpower?
Already a 'shortage' is . . . p. 21

commer-
ciation:
p. 27

Chemicon—his
Monsanto
. p. 60

in potash
other prob-
lems augur rougher times . p. 69

Put more zip into bill collection.
Many are turning to lockboxes.
Can they help you? . . . . p. 46

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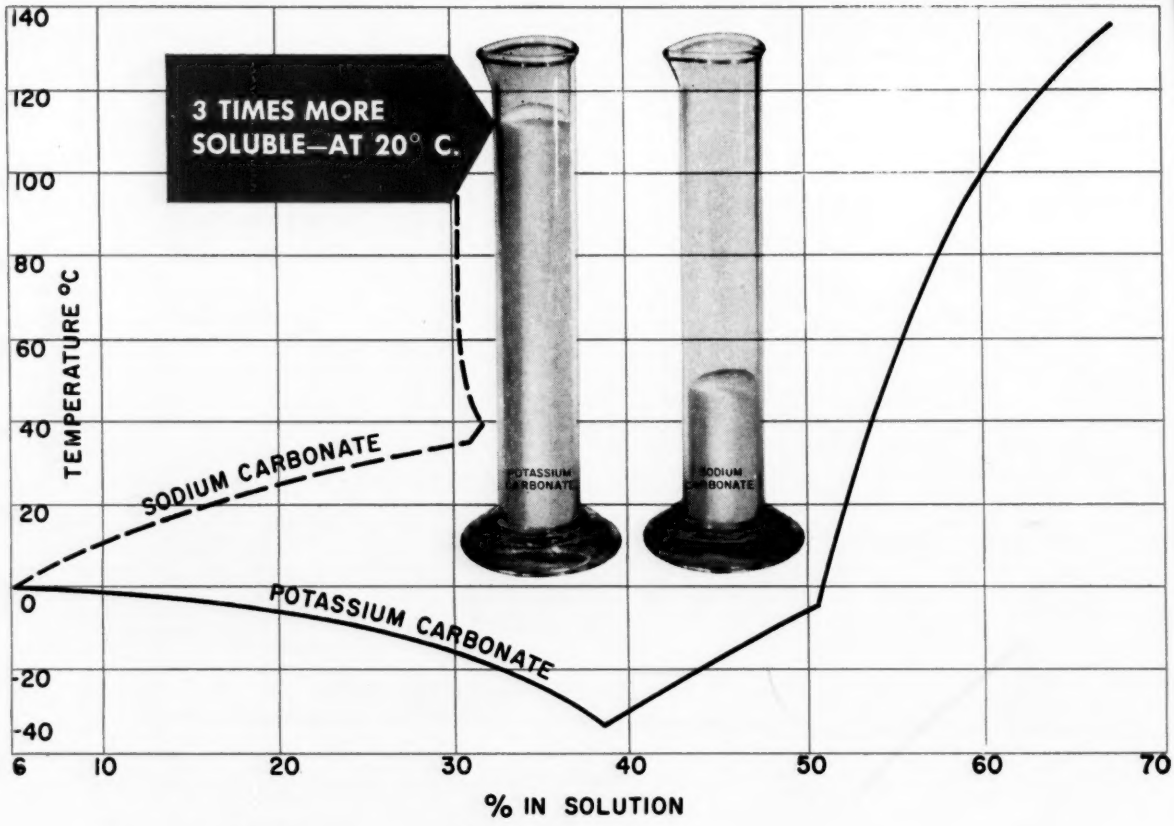

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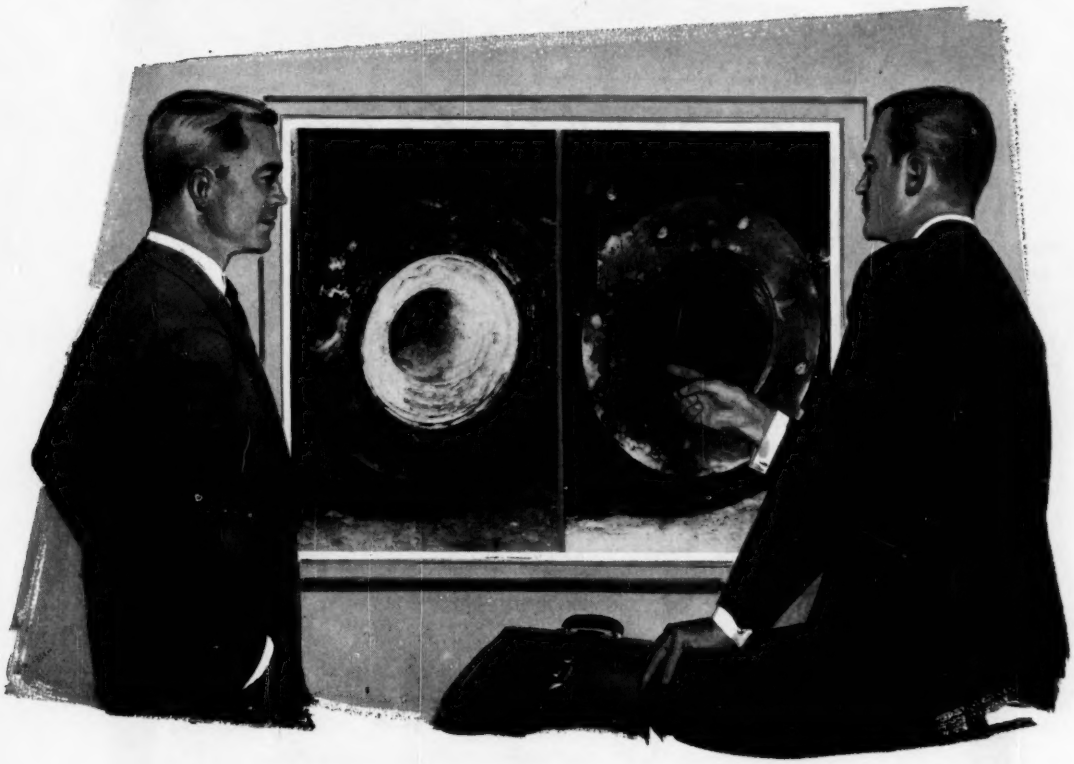
here's how Dowell chemical cleaning saved $71,000 and helped protect a plant profit!



A few months before their peak season, the operators of this plant decided their main water line might not supply the water necessary to meet peak demands. The line was cast-iron, 16-inches in diameter and over 7,000 feet long. Its original flow efficiency or "C" factor had been 105; scale build-up had reduced this to 72. To lay an auxiliary line would cost at least $85,000.

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Chemical Week

TOP OF THE WEEK **July 13, 1957**

- **Here's how Revlon is moving** to take a hand in the affairs of pharmaceutical maker Schering .....**p. 23**
- **Country-by-country rundown highlights photo film situation** around the world. The U.S. is still the biggest market, but consumption elsewhere is showing a substantial rise **p. 32**
- **Fuels research objectives continue unchanged,** though Detroit's automakers will stress automobile safety, not power and speed .....**p. 76**
- **Is it worthwhile for a firm to recruit top management personnel** in a separate program? IMC has found this answer **p. 86**

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17 BUSINESS NEWSLETTER

21 Was there ever a real shortage of engineers? New study by research group reports that low growth of engineer salary levels indicates no high demand for their services.

22 Here's the full story on current drive to nationalize Mexico's sulfur industry.

23 The Schering-Revlon control battle gets hotter, as outsiders weigh effect of prednisone publicity on company's sales.

24 United Dye and Chemical plans to recapitalize—but some stockholders aren't happy about company activities.

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Iodide dissociation process gets first commercial-scale tryout in making superpure thorium metal.

28 Suspension gasification process is first step to low-cost process to make manufactured gas substitute.

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60 PRODUCTION

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78 Bristol Labs' over-the-counter antihistamine takes on new stature as potent mental drug.

80 Speedy spectrochemical method for metal analysis turned up by U. S. Steel researchers.

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92 Promotion of informal exchanges between industry men and educators is object of these summer seminars.

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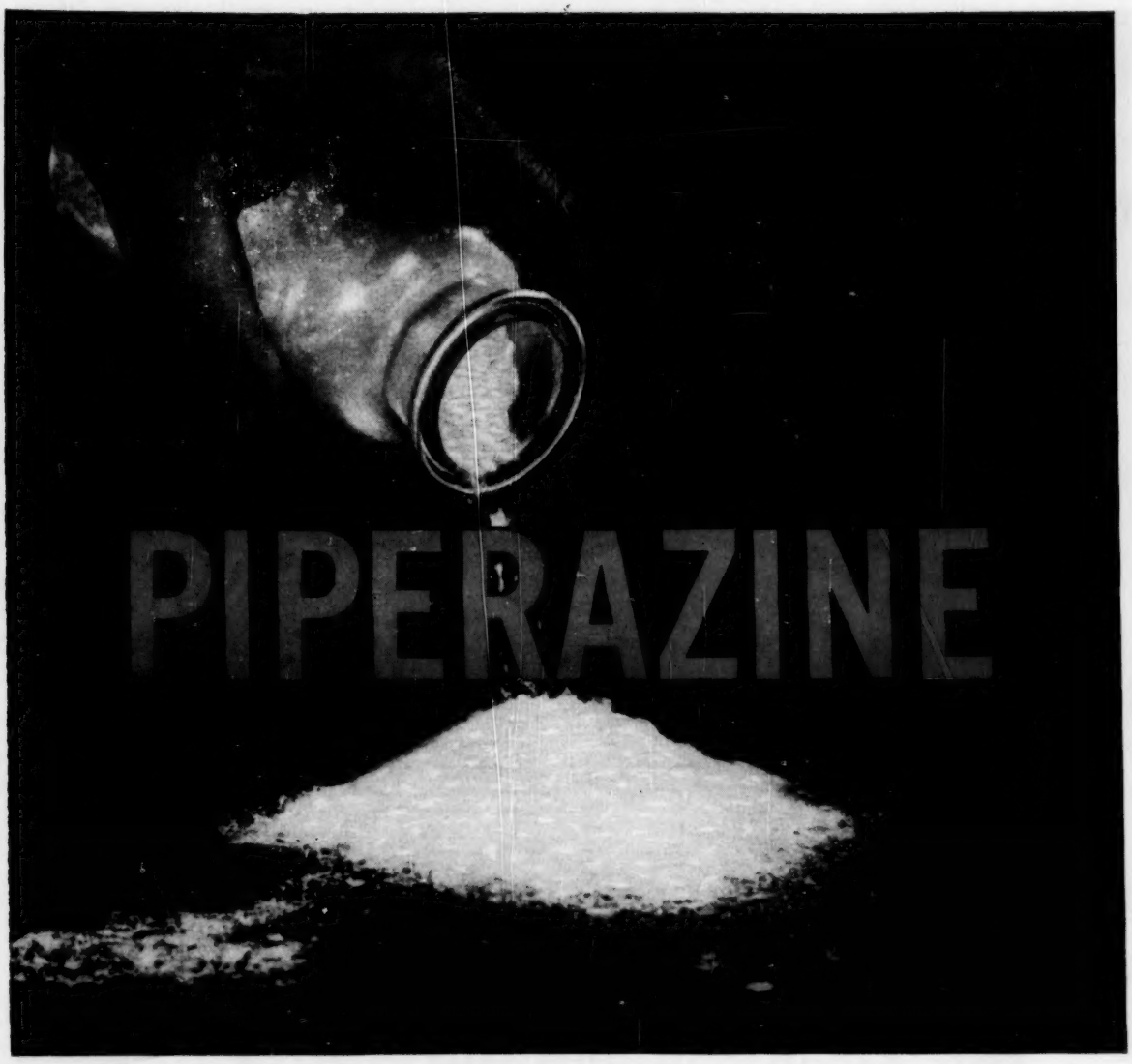

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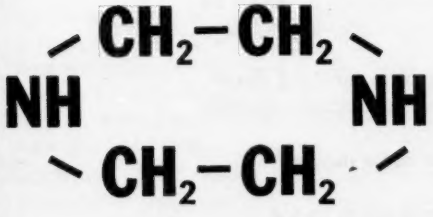

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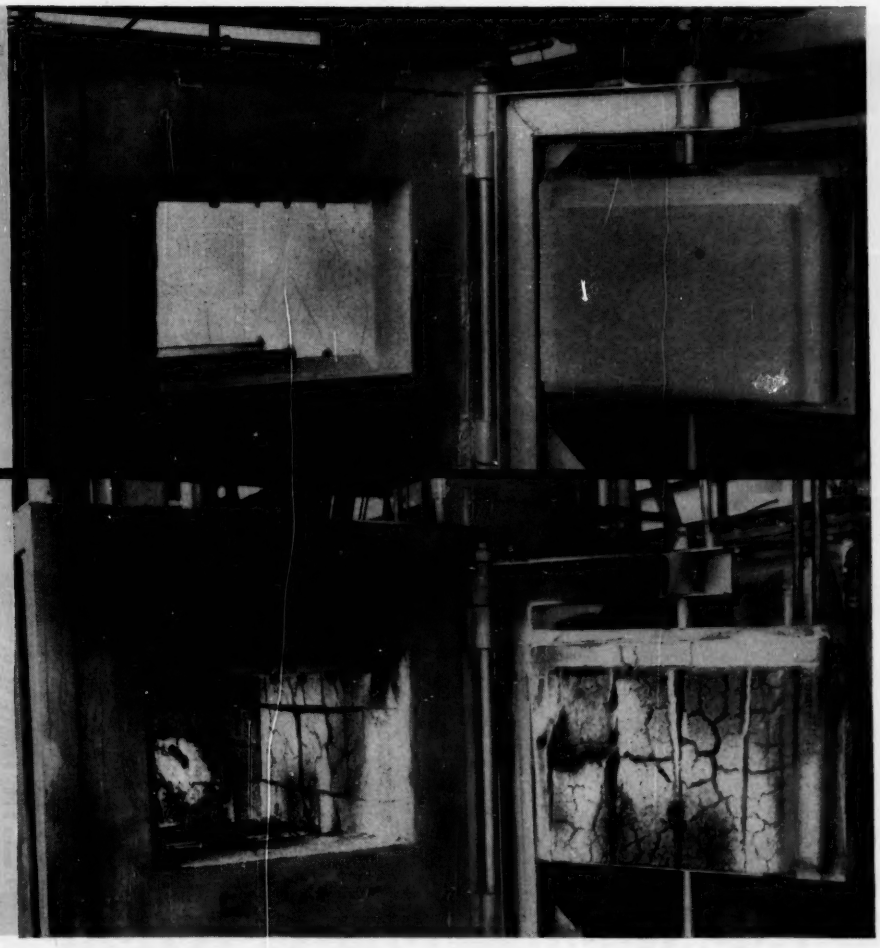

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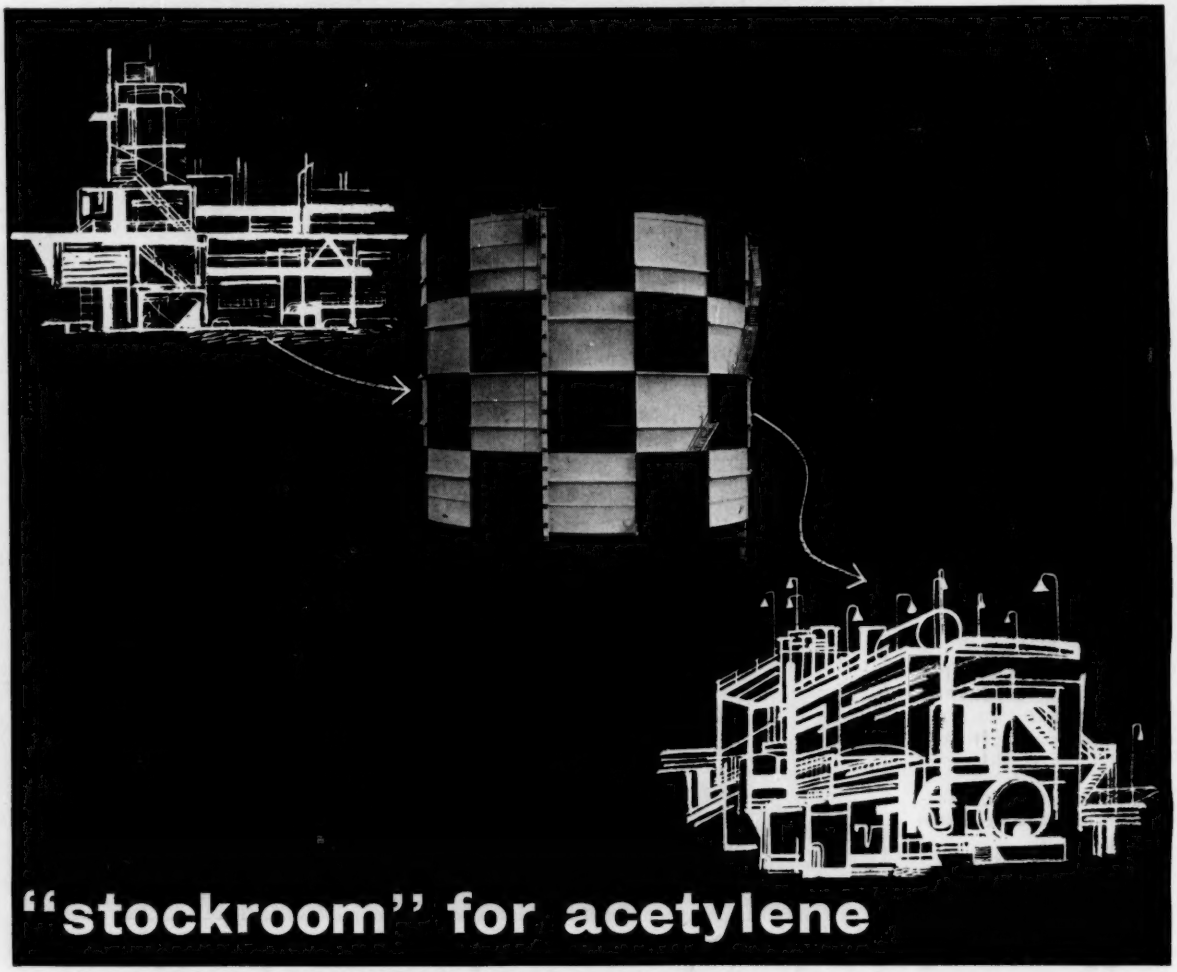

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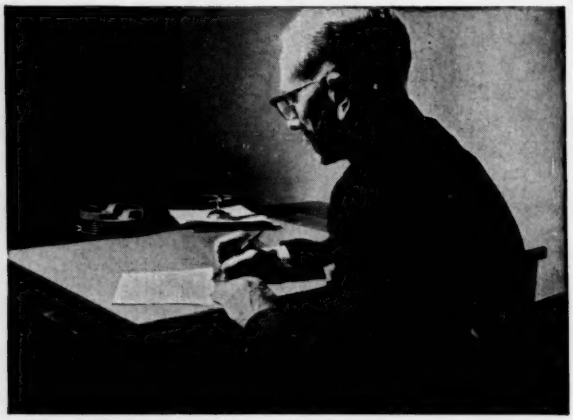

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OPINION

Oxygen Figures

TO THE EDITOR: I suppose that the context of the first paragraph of the article "Keeping Up the Growth in Tonnage Oxygen" *(June 15, p. 92)* should lead to the conclusion that "17 billion cu. ft." in line 6 is a typographical error and that the correct figure is 71 billion cu. ft. . . .

The information on cost of oxygen given on p. 96 would be more useful, I believe, if the grade or purity of the oxygen were named. Perhaps those directly in the field know automatically that 98-98.5% purity is meant.

The rapidly increasing use of oxygen in industry is interestingly portrayed.

W. F. FARAGHER
Consultant
Oxy-Catalyst, Inc.
Wayne, Pa.

Your 71 billion figure is right. We didn't specify the grade or purity of oxygen in our cost data on p. 96. We gave a range from $5 to $12 per ton, which allows for variations in plant size and also for different combinations of oxygen grades produced. Producers would not give us the cost of production for a particular grade, but they agree with our cost range.—ED.

Broad-Gauge Job

TO THE EDITOR: I have just finished reading the article (*June 8*) on Vincent A. Riggio and his varied responsibilities as an instrument engineer. I do wish to compliment you on an excellent job in portraying the man and the important work he is doing.

There is something that could be added to your story that may have been omitted because of lack of space or perhaps because of Mr. Riggio's modesty. In the USI organization, production and engineering functions are the responsibility of one department. We are organized this way so that no conflict can arise between the engineering and operating groups. You mentioned in your article that Mr. Riggio is now connected with the central chemical engineering department. By virtue of the aforementioned organization, he is responsible for instrumentation in all new plants, as well as all operating plants. We in the management of USI believe in instrumentation to the extent that its proper coordination requires a top man in a head-office staff position.

ROBERT H. CORNWELL
Vice-President—Production
U. S. Industrial Chemicals Co.
New York

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

Ugite and Ethylene

TO THE EDITOR: We read with great interest your article titled "Gas Plant: Key to Cut-Rate Ethylene" (*June 22*). Pennsylvania Industrial Chemical Corp.'s interest is particularly keen in that in 1945 we acquired the Ugite Chester plant and the United Gas Improvement Co.'s patent estate for the Ugite process for producing valuable hydrocarbons (now usually described as "petrochemicals") by the high-temperature cracking of petroleum oils in gas plant facilities. With all due deference to Mr. Stark and your staff writer, we venture to suggest that this process and its development may claim no little credit for pioneering the application of gas-plant methods to the production of valuable hydrocarbons, if not to ethylene *per se*.

In discussing the Stark process you rightly noted that " . . . oil gas generators permit cracking with steam (to lower carbon deposits) without catalyst." As UGI'S director of research, N. K. Chaney, pointed out in a 1949 paper (*Chemical Engineering Progress*, 45, 71) reviewing Ugite Developments in High-Temperature Pyrolysis, " . . . no other cracking procedure (than cyclic checkerwork) had been equally successful in solving the problems caused by excessive carbon deposition at the high cracking levels necessary for substantially complete conversion of petroleum oils into unsaturated aliphatics and aromatics."

The Ugite process is characterized not only by the use of carburetted water-gas manufacturing equipment but also by its use under carefully controlled conditions, so as to insure controllable product yields and maximum economic desirability.

In addition to the pyrolysis products mentioned in your article, there can be produced and recovered from Ugite process operation the following: isoprene and piperylene, styrene, methylstyrene, indene, naphthalene, methylnaphthalenes, and various other unsaturated and/or aromatic hydrocarbons.

The UGI comprehensive research, development, and pilot-plant program was in vigorous progress in the 1930s, and culminated in the construction of a producing plant (1939-40) and the creation of a diversified patent estate covering pyrolysis, recovery, isolation, purification, and chemical and plastic utilization of hydrocarbons. The plant was operated privately in 1940 and '41, then operated for the Reconstruction Finance Corp. (Rubber Reserve) during the war years to produce butadiene, having an oil feed capacity of about 30,000 gal./day. Based on these developments was a larger butadiene plant built in Los Angeles by Southern California Gas Co. for a naphtha feed of 882,000 gal./day.

The patents have since been licensed to Pennsylvania Industrial Chemical Corp., which also acquired, at the end of 1945, the Chester plant (Ugite Plant 2) and the bulk of the UGI Research Laboratory personnel and facilities.

Ethylene is one of the major individual products from this process. At a cracking level desirable for broad economic product balance, Mirando or similar crude oils yield over 0.9 lbs. of ethylene per gallon of oil cracked, not to mention 0.5 lbs. of propylene besides. Although the isolation and chemical utilization of these hydrocarbons was considered, circumstances at the time dictated their sale as residual gas in the Philadelphia area.

We agree wholeheartedly that the use of gas-plant facilities for petrochemicals, including ethylene and propylene, merits careful study. The point cannot be too strongly emphasized

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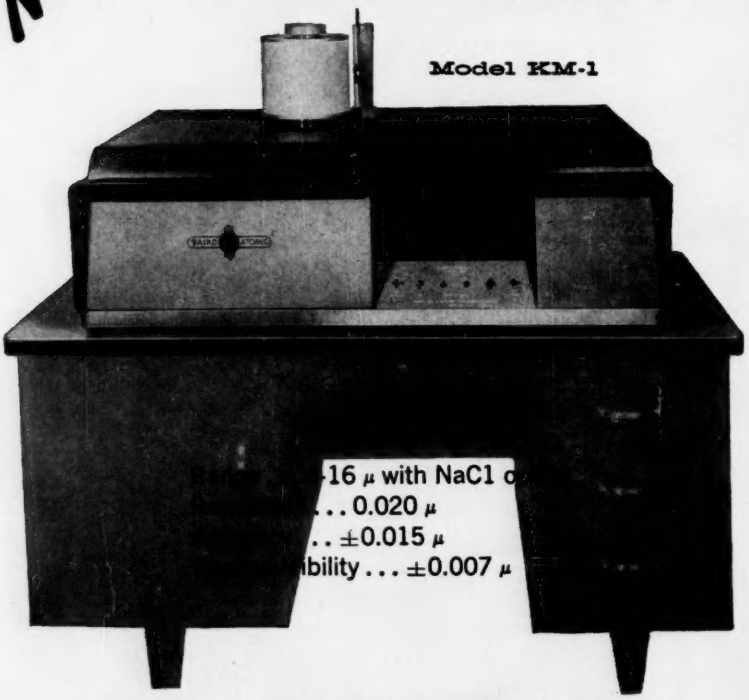

BAIRD-ATOMIC's new KM-1 Spectrophotometer is the first expandable double-beam instrument in the infrared field — resolution and quantitative accuracy can be increased by the addition of "expandability" kits. This outstanding instrument is a result of B-A's 20 years of research and development — it is ideal for: routine laboratory analyses, production control, raw material inspection, etc.

The outstanding features of the KM-1 are:

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OPINION

that the economics must take into account the balanced marketing, and values as marketed, of all the products of pyrolysis. Of interest in this connection is that the Ugite process gave (and can give), with appropriate product harvesting facilities, profitable operaton even without crediting the thylene produced at a value higher than fuel. This is cheap ethylene with a vengeance!

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Director of Research
and A. H. RIDDELL
Development Engineer
Pennsylvania Industrial Chemical Corp.
Chester, Pa.

MEETINGS

British Plastics Exhibition and Convention, Olympia London Grand & National Halls, London, July 10-20.

Denver Research Institute, Metallurgy Division, 6th annual conference on industrial applications of X-ray analysis, Albany Hotel, Denver, Aug. 7-9.

American Society of Mechanical Engineers and American Institute of Chemical Engineers, first national conference on heat transfer, Penn State University, University Park, Pa., Aug. 12-15.

Northwestern University conference on liquid scintillation counting, Technological Institute, Evanston, Ill., Aug. 20-22.

American Soybean Assn. and National Soybean Processors Assn., annual meeting, Leamington Hotel, Minneapolis, Aug. 26-28.

Fisk University, 8th annual infrared spectroscopy institute, Nashville, Aug. 26-30.

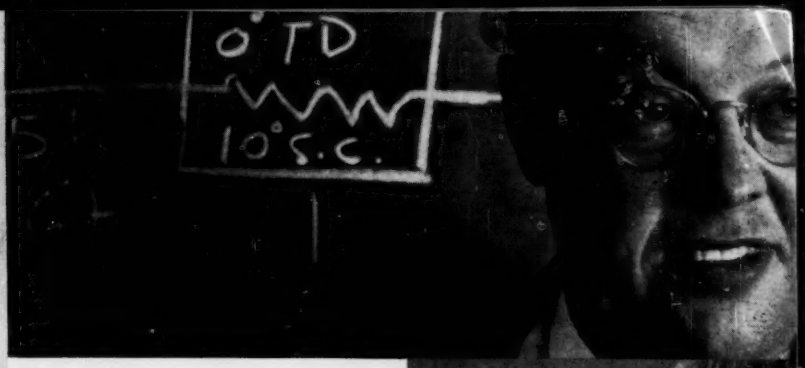
Instrument Society of America, international symposium on gas chromatography, Kellogg Center for Continuing Education, East Lansing, Mich., Aug. 28-30.

National Agricultural Chemicals Assn., annual meeting, The Essex and Sussex, Spring Lake, N. J., Sept. 4-6.

Instrument Society of America, 12th annual instrument automation conference and exhibit, Auditorium, Cleveland, Sept. 9-13.

Technical Assn. of the Pulp and Paper Industry, testing conference, Hotel Shoreham, Washington, Sept. 11-13.

International Union of Leather Chemists Societies, 5th conference, Rome, Italy, Sept. 15-20.



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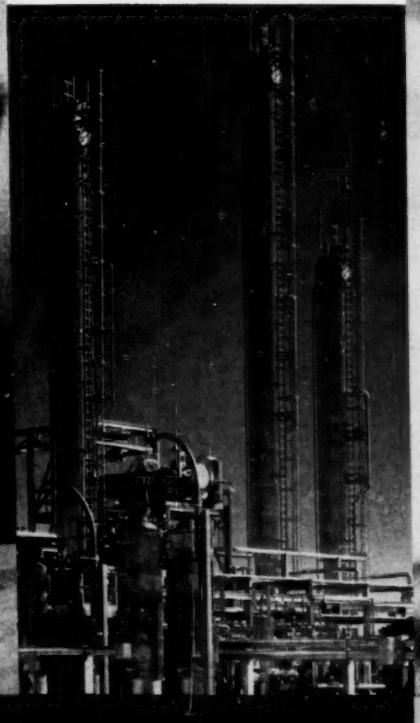

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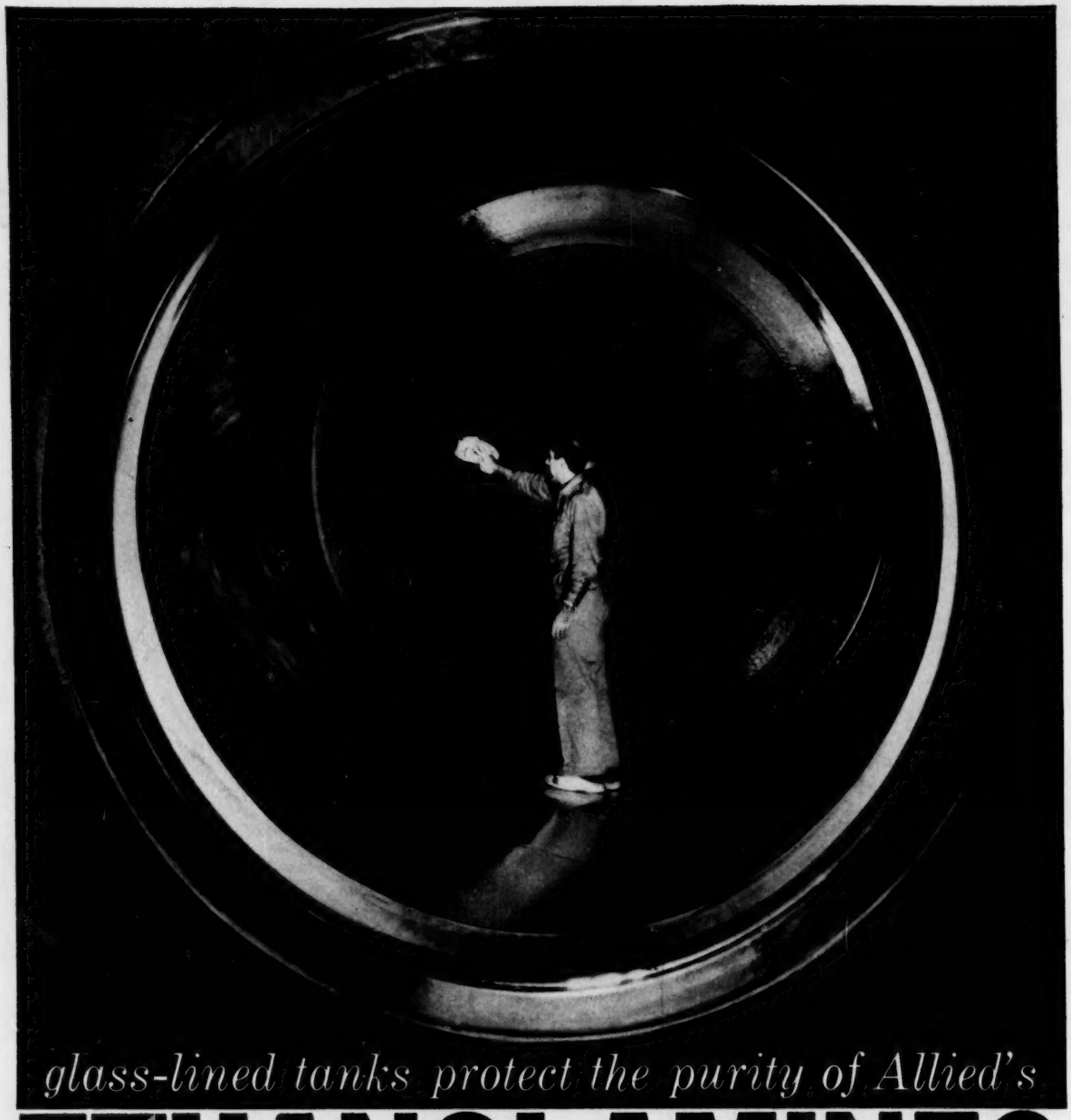

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Allied Chemical — NITROGEN DIVISION

40 Rector Street, New York 6, N. Y.

Business Newsletter

CHEMICAL WEEK
July 13, 1957

Union Carbide, its major U.S. expansion set, will expand abroad, too. It has formed an Italian company, Celene, S. P. A., with Societa Edison, of Milan, as joint owner. The new organization will make and market high-pressure polyethylene; plant output will be 24 million lbs./year.

For Carbide, the move marks expansion of its plastics interests. For Societa Edison, the new firm represents still another venture into the broad field of chemistry. Only last month, it joined up with Chemstrand Corp. to form a company to produce acrylic fibers, a venture following on its decision to produce acetylene at a plant under its own name.

Another joint U.S.-Italian venture is Resinova, Inc. This firm, set up in the U.S. by Italy's Snia Viscosa and the U.S. firm Schwarzenbach Huber Co., will produce a new type of coated textile. General Aniline is doing market research work on paper application of the product.

The material: a paperlike substance called Papertex, based on acrylic-coated nylon cloth. The coating, on 30-, 45- and 60-denier nylon, produces a tough sheeting said to be resistant to tearing, flames and water. Production of 15 million sq. yds. is the goal for the first year of operation. Retail price is expected to be about $1/sq. yd. Major markets will be the printing and photographic industries.

•

Management men concerned with professional-level unions had two new developments to ponder this week: the proposed establishment of a new, more militant union of engineers and scientists, and the granting of "unleveling" wage increases by a major employer of engineers.

Disagreement with Engineers & Scientists of America policies has resulted in a withdrawal, over the past few months, of local groups accounting for nearly 50% of ESA's 45,000 membership. The withdrawal of various locals came about because of their disagreement with the policy established by the majority of ESA members that limited ESA's membership to professional-level engineers and scientists. The dissidents favor a somewhat more militant bargaining program that is based on inclusion of draftsmen, other technical assistants in employee bargaining units.

"Unleveling" wage increases were granted to engineering employees of Boeing Airplane Co. (Seattle) who earned more than $572/month. The employees, members of the Seattle Professional Engineering Employees' Assn., last week accepted a new one-year labor contract that also calls for a 4% salary increase for all engineers. The unleveling increase was necessary (*CW, June 15, p. 68*) because the higher salaries paid new engineers tended to level off all salaries without proper regard for the experience of older engineers.

•

Baltimore's tax on manufacturers' inventories was ruled legal last week by Maryland's supreme court, dashing hopes of industry officials

there that tax assessments totaling $11 million under the city's controversial tax law (*CW Business Newsletter, March 9*) would not have to be paid. Several chemical firms, including Food Machinery and Chemical, have held up possible Baltimore expansions in hopes that the law would be ruled unconstitutional; they may now switch expansions elsewhere.

•

Two foreign expansions make news this week.

Du Pont will build a new paint plant in Cuba. Work on the new unit will start in November, with a completion date of September, '58. Du Pont Inter-America Chemical Co. will operate the plant.

Archer-Daniels-Midland has moved into West Germany, via construction of a plasticizer plant near Ruhle. The plant, parts of which are now operating, is run by Scado-Archer-Daniels GmbH.

•

More pesticide tolerances for meat were set last week by the Food & Drug Administration. FDA has fixed a 7-parts-per-million residue limit on toxaphene in the fat of cattle, goats and sheep; 3 ppm. of methoxychlor in the fat of cattle, sheep and hogs. It had earlier (*CW, March 30, p. 43*) established a 7 ppm. tolerance level for DDT in the fat of cattle, sheep and hogs.

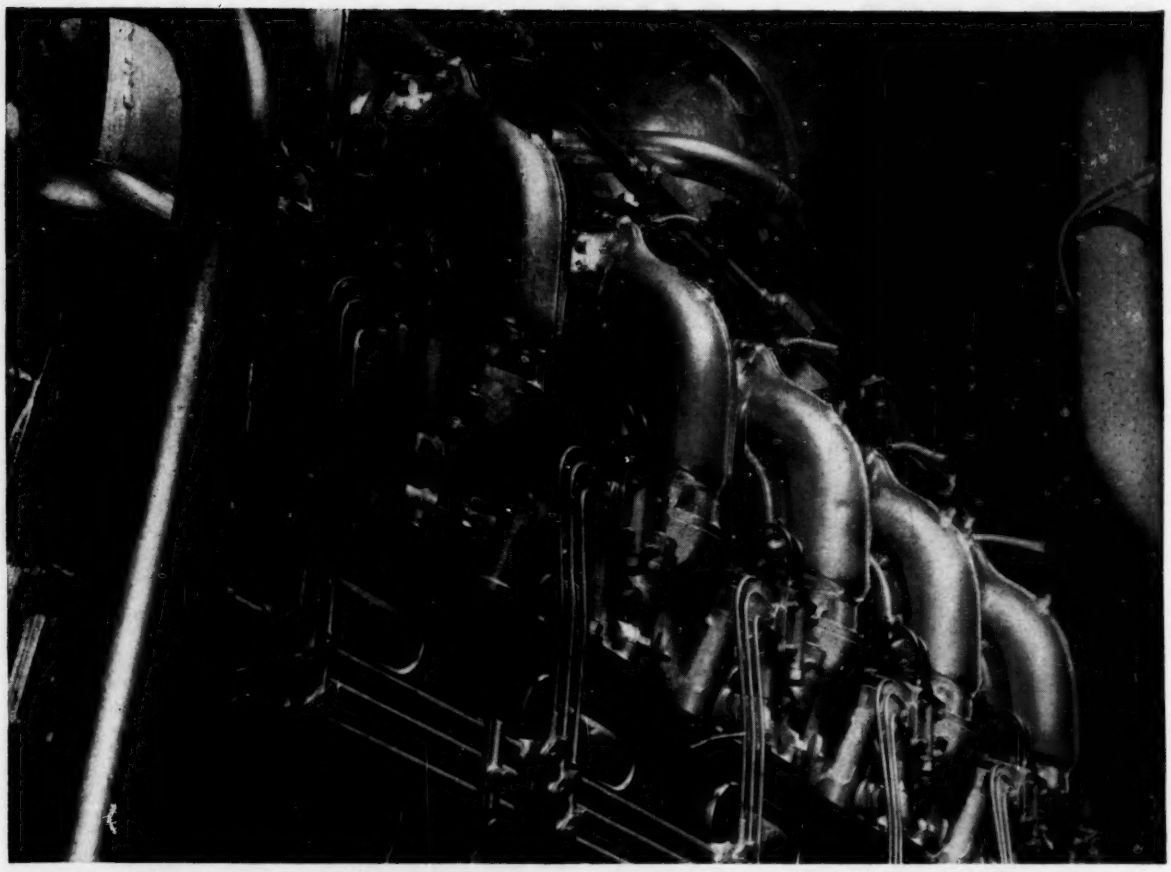
Still undergoing what an official calls "very careful review" are chemical manufacturers' petitions for establishing tolerances for aldrin, dieldrin and endrin.

•

A "fully competitive" synthetic rubber industry is shaping up "slowly," Attorney General Herbert Brownell, Jr., reports in his second annual summary of industry conditions. (The annual reports were requested by Congress in 1955 when the government sold all but one of its 27 World War II rubber plants.) Last year's developments reflect "favorable progress on the whole," though there are still "some factors of concern."

On the credit side, Brownell cites a 50% increase in the industry's productive capacity, a shifting from a sellers' to a buyers' market, with more rivalry for customers than ever before. Also, he points out that General Rubber Co.'s participation in building a new copolymer plant shows that it's possible for new companies to get in the field. Other cited plus values: no one company got too big last year; butadiene production is increasing; Petroleum Chemicals Inc.'s plans to start producing butyl will mean competition in that field for the first time.

What worries Brownell is a continuing "price rigidity and uniformity," Shell Chemical's lack of direct competition on the West Coast, and the fact that small business's share in the industry has not grown proportionately to the industry as a whole.



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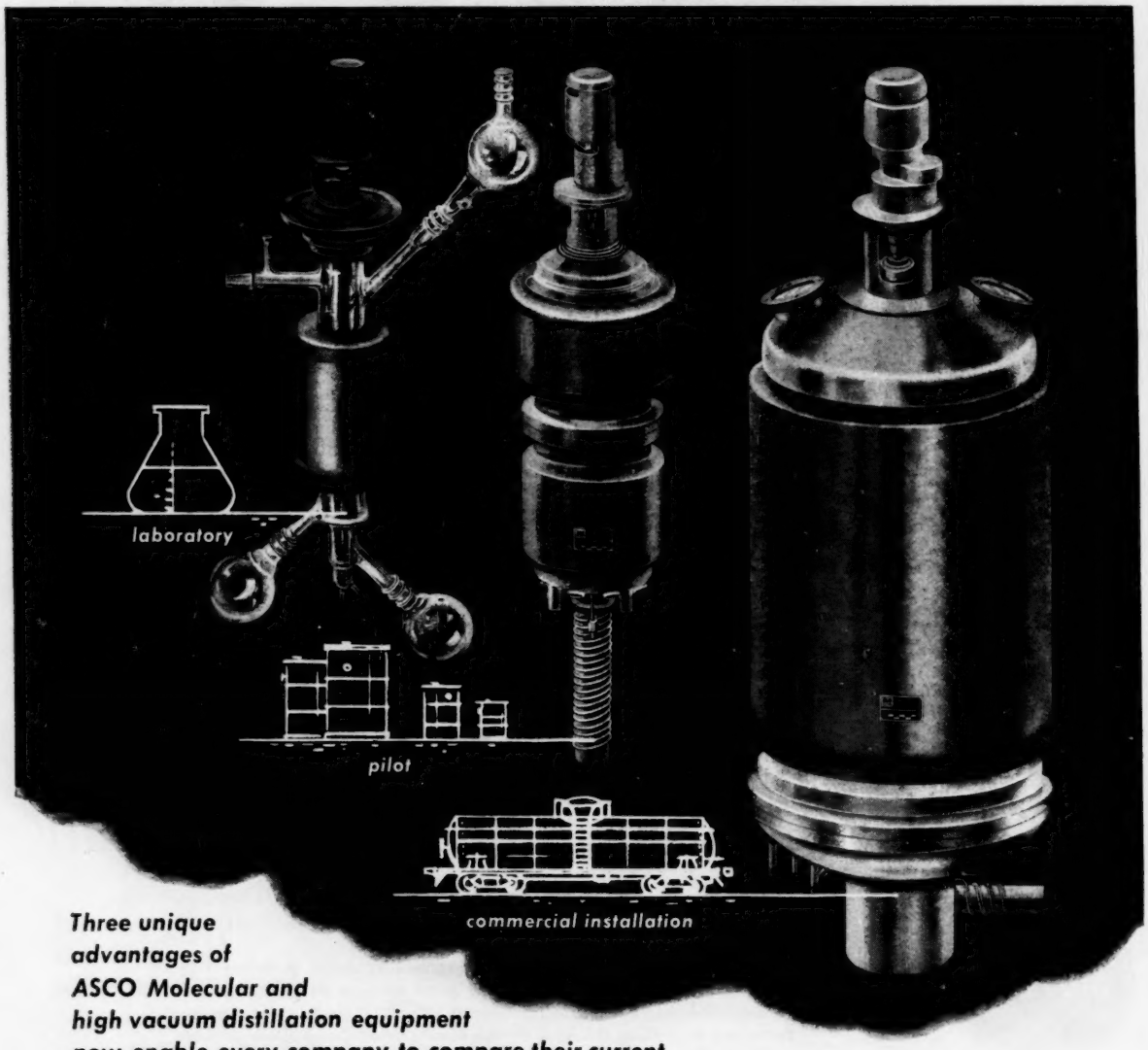

Three unique advantages of ASCO Molecular and high vacuum distillation equipment now enable every company to compare their current processing costs against the economical use of ASCO molecular stills.

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Installations now in operation report processing costs of less than ½ cent per pound, enabling greater profits to be realized in the span of chemical markets from inexpensive wax recovery to costly tranquilizing drugs.

Test results obtained on the ASCO 50 Laboratory Still may be scaled up to production sizes directly, since 50 square inches of evaporative surface on the laboratory unit will demonstrate the results obtainable on the ASCO 4.8 square feet pilot model and the ASCO 50 square feet industrial model. The ASCO 50 Rota-Film Still is just $391. A 16-page bulletin is available describing the large units. (Write Dept. CW-7)

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Are Engineers Really So Much in Demand?

Statistical evidence supporting the minority view that there really is no shortage of technical manpower was issued last week in the form of a study* sponsored by the National Science Foundation.

The study chooses a definition of "shortage" stating that in a free labor market "a shortage exists when the number of workers available increases less rapidly than the number demanded *at the salaries paid in the recent past*." With this definition as a spade, the report digs into a wealth of statistical information. The data analyzes supply and demand of engineers and chemists in terms of salaries and wages, college enrollments, attrition and a variety of other factors.

Outcome: The analyses, drawing heavily on U.S. Census, Bureau of Labor Statistics, and privately developed material, show that engineers' median salaries since 1934 have been growing steadily smaller in relation to the salaries of full-time wage and salary employees, full-time manufacturing wage earners, and other occupational groups.

Put in the form of a chart of salary growth over these years (*see right*), the figures plainly show that engineers' earnings growth hasn't kept pace with that of the above-named groups.

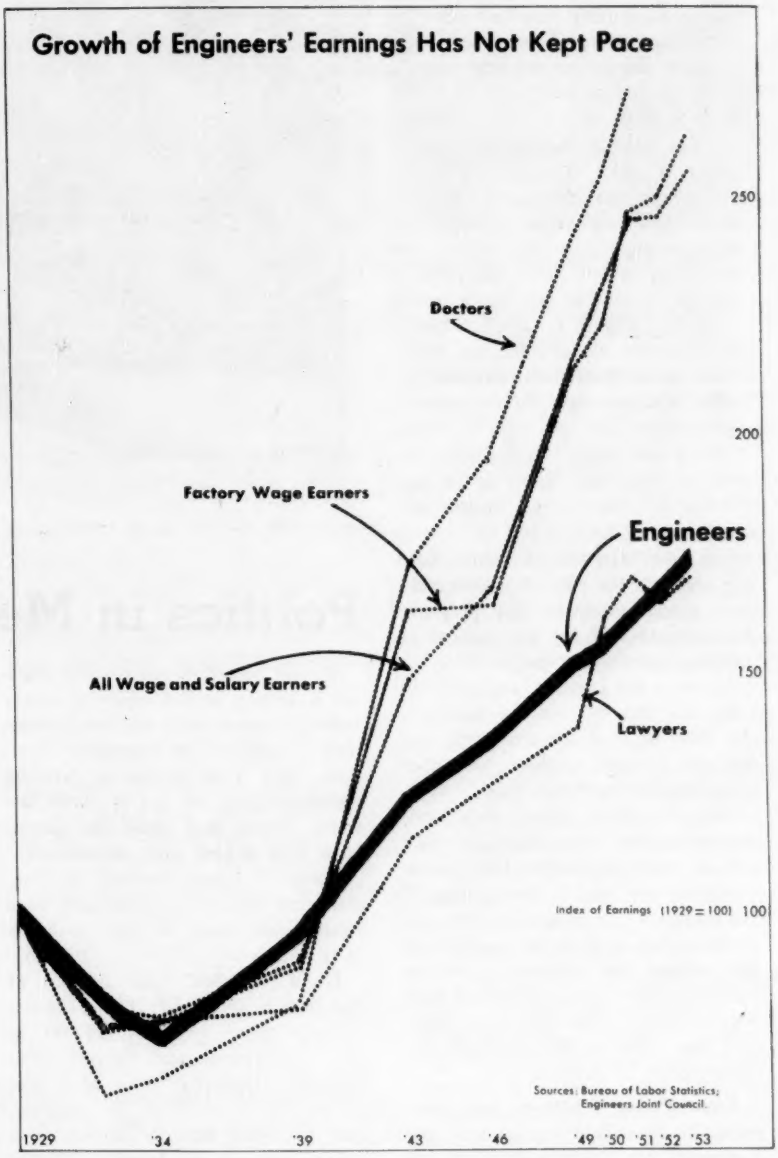
The Economics: The study is expressed in familiar economic terms. It says that a shortage will cause salaries (prices) to rise while less skilled personnel (substitute materials) take over fringe tasks (applications).

Put the engineers' salary growth pattern in this framework and the argument that there's a shortage loses force—that is, since engineers' salaries haven't grown as rapidly as those of other wage and salary earners, the demand for engineers can't be as great.

Matter of Relativity: Basically, of course, this resolves into an argument of relative meanings. It doesn't necessarily mean that there's little demand for engineers, only that the demand isn't as great as that for people in other occupations.

But it does raise the question of whether or not the strong hue and cry of recent years over the technical manpower shortage is justified.

Point of View: To be sure, the authors point out that their conclusion that there is no shortage will raise eyebrows. They recognize, however, that some people's definition of shortage may not be the same as a purely free-market definition. Again, they acknowledge that the statistical



* In book form, it's "The Demand and Supply of Scientific Personnel", by David M. Bland and George J. Stigler. National Bureau of Economic Research. 200 pp., $4.00.

base of the study is not as broad as they would wish, but that this is a limit imposed by the unavailability of better statistics.

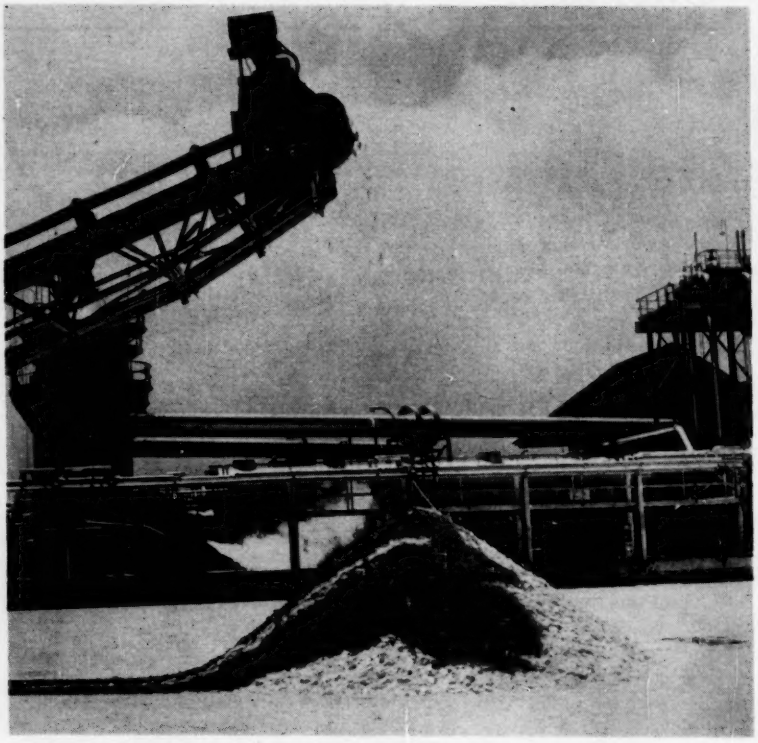
To those who profess to see a serious shortage of engineers, the supply-demand concept of shortage will certainly be too narrow. There are those who will argue that, although a company may be adequately staffed at present operating levels, a bigger supply of engineers would permit it to operate at even higher levels.

Other Views: And there are other points of view. While a few voices claim there's no shortage of engineers in any field, others say that there is adequate supply in some areas, low supply in others. For example, a company operating highly automated plants may find it has sufficient chemical engineers to operate the plant, but insufficient electrical engineers to design and maintain the automation equipment.

There are other observers in the industry who feel there is an imbalance of engineering supply, not a shortage. They claim that some small and intermediate firms keep engineers on the payroll in non-technical capacities, to be able to prove an adequate staff for the purpose of securing government contracts.

Many in the chemical industry will feel, too, that by stressing engineers and their salaries, the new study has not put enough emphasis on other branches of scientifically trained manpower. In some cases, they feel, mathematicians and physicists take part in many engineering jobs; moreover, they are vital to the training of engineers. But in evaluating the role of this group, it must be remembered that colleges and universities employ more of such scientific personnel than does industry. It is difficult to compare the needs of industry with the requirements of schools.

Same Plans: Whatever the viewpoint, it's practically certain that few companies will abandon their present procurement standards. Even though the totals of engineering talent available may be sufficient to cover total needs of industry, as the study seems to indicate, it's evident from the statements of a number of firms (*CW, Mar. 16, p. 82*), that shortage or not, they're feeling a pinch.



SULFUR IN MEXICO: "Foreigners are robbing us."

Politics in Mexican Sulfur

Recent recurrent reports that Mexico is moving to nationalize its sulfur industry appear to be without foundation. A number of prominent Mexicans have been quoted as favoring nationalization, but a CW check last week reveals that those so quoted have later denied such statements.

Some of those involved, in fact, state that U.S. sulfur companies have contributed much to the economy (*CW Business Newsletter, July 6*).

Good Neighbor: Take the case of Pan American Sulfur. The company recently spent over $1,750,000 in plant expansions and is now constructing a shipping dock at a cost of another $1 million. In addition, Pan American recently agreed, in a union contract, to spend $240,000 during a four-year period to construct a union building, hospital, school and soccer field in Jaltipan, Veracruz. In 1956, Pan American put some $9 million into the Mexican economy, including $4.4 million dollars in direct taxes. From the over-all point of view, it's estimated that U.S. companies have $750 million invested there.

There's no denying, however, that a "foreign investment hangover" exists as a result of the famous Mexican oil expropriations of 1938. But U.S. industrialists in Mexico show very little fear of nationalization. They have learned that standard practice for publicity-seeking politicians is to charge "foreigners are robbing us."

Good Trick: Such an outcry will get a good play, observers say, in the Mexican press. Because so many such inflammatory speeches have been made, sulfur companies have formed a Mexican Sulphur Institute to disseminate facts about the industry.

Mexican president Ruiz Cortines has gone to great lengths to maintain and improve good relations between the U.S. and Mexico. He has been reported as being resolved that no nationalization will occur in his administration. But he has not said so publicly. Whether or not he does, the sulfur industry probably will always be an appealing target for headline-seeking politicans.

FTC Eases Paper Case

The Federal Trade Commission last week dropped most of its monopoly charges against International Paper Co.

Under an agreement—a consent decree—worked out between FTC and International, the company may keep its holdings in Long Bell Paper Co., acquired last November. But it must sell its interest in Longview Fibre Co., acquired through the merger.

Suit Dropped: And, though International is also prohibited from buying any interests in its competitors for the next 10 years, FTC will, in return, drop its antitrust complaint against the company, and give up its fight to force International to get rid of its other Long Bell holdings.

The antitrust charges were based on International's acquisition of the West Coast timber firm and its parent holding company (*CW, Sept. 15, '56*). International exchanged 900,000 shares of its stock—valued at $117 million—for virtually all the assets of the Long Bell firms.

New Plant: Now International is planning to build a mill in Oregon, adjacent to Long Bell timber holdings. FTC, though it's not contesting International's right to use Long Bell resources to feed the new mill, has stipulated that LB must sell at least 40% of the mill's output to independent wholesalers in 11 Western states: Washington, Oregon, California, Idaho, Utah, Nevada, Montana, Wyoming, Colorado, Arizona, New Mexico.

FTC officials, in explaining their decision to let International use the Long Bell timber, said that International has never before operated in the Far West and that the move would stimulate competition in the area. Besides, officials noted, International had planned to build the mill before the merger was conceived.

Although International's more important Long Bell acquisitions were, in effect, declared legal, the company "must divest itself absolutely" of the Longview Fibre shares, says FTC.

The first step will be a transfer of the stock to an FTC-approved bank. The company must then be rid of all Longview stock within the next 10 years, and the stock cannot be sold to International executives or affiliates.

REVSON, NIAM'S BUNIM: Despite surprises, steady stock gains.

New Worries for Schering?

Schering Corp. stock is still steady this week, at a near-peak $81/share mark, despite a couple of surprise disclosures:

1—The revelation that cosmetic giant Revlon now is the largest single shareholder — 8% of stock — in the firm.

2—The statement of a prominent arthritis specialist that prednisone (Schering's important antiarthritis hormone) may cause serious side reactions, must be used with considerable caution.

Revlon, largest retail cosmetic maker in the U.S., has made no bones about its desire to diversify into the ethical drug field. With sales now in the $85-million/year range, it is riding the crest of a fabulously successful promotion program, much of it built around the TV show, "The $64,000 Question."

Revlon says its purchases of Schering stock are for investment purposes only—that it isn't seeking a management role. Nevertheless, some financial experts (and perhaps Schering's management) expect a proxy fight, eventually.

Schering's high stock price may well be due to the recent stock purchases by Revlon, which says it now owns 150,000 shares of Schering. Last April, Schering stock was selling for about $54/share. It would appear, therefore, that Revlon's investment was a minimum of $8 million.

Delayed Reaction: The feeling among Schering management is that the Revlon acquisition could affect it more than the comments of Arthritis Specialist Joseph Bunim. Bunim, of the National Institute of Arthritis and Metabolic Diseases, says that prednisone can have serious side effects.

As Bunim himself points out, Various medical studies have produced widely varying evidence on the side effects of prednisone therapy. Bunim finds 24% of his patients develop ulcers after prolonged hormone treatment, but he says he knows of studies where less than 1% of patients get ulcers. And he makes clear that he still feels prednisone is a valuable hormone for arthritis treatment. The problem concerns dosage. The prescribing of more than 15 mg./day, Bunim feels, is unwise.

A Schering official points out that these cautions about prednisone have been made—and disputed—before. It says that prednisone products still have medical superiority over other hormone products for arthritis, and that record sales last year and accumulating evidence bear out this contention.

Schering further maintains that in the histories of many recently devolped drugs—antihistamines, for instance—early successes usually are followed by a wave of unfavorable comment.

New Cash for United

Plans for long-term financing of United Dye & Chemical and recapitalization of United's affiliate, Bon Ami Co., were elucidated last week at the firm's annual meeting, held at Belleville, N. J.

Financing for United Dye, said Virgil Dardi, new president of the firm, would probably include an offering of debentures. This would be in preference to issuance of new common stock, although Dardi cautions that a capital stock sale may eventually be necessary.

Dardi refused to reveal details of the Bon Ami recapitalization, ating that it would be premature to do so now. Bon Ami, called an affiliate by United Dye, actually lists its operating results separately. United Dye last year bought 45.3% of Bon Ami's Class B stock.

As a result of that purchase, United Dye has negotiated a $7,500/month consulting contract with Bon Ami. Total fee, $150,000, covers a 19-month period. Income from this source has already bolstered United Dye's earnings (the company lost $38,272 on $2.9-million sales last year): in 1956, $60,000 of it was credited to income. The remainder will be credited in 1957.

And an agreement between the firms provides that five United Dye nominees are to be elected officers of Bon Ami for a maximum aggregate compensation of $50,000. For six months last year, this amounted to $30,000.

Dressed for Binghamton Business

U. S. Attorney General Brownell and assistant, Dallas Townsend, director of the Office of Alien Property, donned lintproof costumes last week as they took an inspection tour of General Aniline & Film's Ansco division plant in Binghamton, N. Y. Purpose of the tour was to evaluate the property as part of the pending sale of GAF assets to American investors. Now that the U. S. Supreme Court has adjourned for the summer, the GAF-Interhandel (Swiss holding company seeking return of the seized assets) proceedings before it must wait upon decision until next fall. While at Binghamton, Brownell revealed that he hopes the way can be cleared for the sale by Jan. '58.

Vaccine Contracts Let

The U. S. Army last week let contracts for production of Asiatic influenza vaccine to two drug companies—Merck & Co. and Allied Laboratories. Though details of other Army contracts probably granted haven't been revealed, it's believed that Vick Chemical Co.'s National Drug division has been given one. The army seeks 4 million cc.'s of the vaccine, as soon as it's available (*CW, June 22, p. 38*). Merck's Sharp & Dohme division is scheduled to deliver a monovalent-type vaccine (immunizing against only one flu strain) to the Army by August. Pitman-Moore division of Allied Labs expects to make delivery of the same type of vaccine within 30-40 days.

Since April, Asiatic flu has spread from Hong Kong to Japan, Formosa, Australia and the Philippine Islands. One shipload of people suffering from the disease has reached the U.S., but principal concern of U.S. officials is for the health of U.S. military personnel stationed in the Far East. The U.S. Public Health Service has not yet established minimum standards for the vaccine and has issued no manufacturing licenses. The Army contracts, however, do set standards.

Aside from Merck and Allied, other companies ready to produce the vaccine include Lederle Laboratories; Eli Lilly & Co.; Parke, Davis; Wyeth Laboratories; and Cutter Laboratories.

Up Exports to Austria

Austria is rapidly expanding its plastics industry, but the nation still needs external supplies. A CW study shows that the U.S. is increasing its share of this market.

Last year, the U.S. supplied 16% of Austria's plastics imports, compared with 7% the year before. The principal plastic provided by the U.S. was polyethylene: the U.S. accounted for 66% of total Austrian imports.

U.S. plastics makers have enlarged their portion of the Austrian market largely by offering superior quality. They usually cannot match the prices of foreign materials. Also, U.S. firms must extend liberal credit—Austria's expansion leaves it short of dollars.

Output Comparison: Austria produced about 12,000 tons of plastics, worth $7.5 million, in 1956.

EXPANSION

Alum: General Chemical Division, Allied Chemical & Dye Corp., will build a new aluminum sulfate plant near Pine Bluff, Ark., to supply paper mills in the area. Completion is scheduled for October.

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Asphalt: R. Campbell & Associates, Canadian investment firm, is the principal backer of a proposed $3-million asphalt refinery to be built near Savannah, Ga. Associated with Campbell is Wade V. Mallard, of Augusta, who will also help finance a new bituminous storage and distribution terminal to be built on a 15-acre site west of the city. A site for the new refinery has not yet been chosen.

•

Alcohols: Signet Distilleries, Ltd., will start construction of a $2.3-million distillery in the city of Saskatoon, Sask. The unit will go onstream late in 1958 with full-scale production slated for mid-'59. The plant will manufacture all types of industrial and pharmaceutical alcohols as well as beverage alcohols. Rated capacity: 27 million gal./year.

•

Pulp: Waskesiu Forest Products Ltd., newly formed Canadian pulp producer, will build a $60-million pulp mill 75 miles north of Saskatoon, where it has taken options on large tracts of timber land. Construction will begin this fall.

•

Paper: Crown Zellerbach Corp. has acquired a site for a new pulp and paper mill west of De Ridder, La., by exercising options taken out early in 1956. At the same time, the firm took option on 27,000 acres adjacent to the property. Most of the land will be used for a reforestation program to build up the proposed mill's resources. Company officials said the start of construction was not imminent.

•

Cresylic Acid: Jefferson Lake Sulphur Co.'s Merichem Division is expanding its Green's Bayou plant at Houston, Tex., to double capacity for making cresylic acid. Cost: $1 million.

•

Boron Chemicals: Callery Chemical Co., jointly owned by Mine Safety Appliance Co. and Gulf Oil Corp., has started construction of a $4-million boron chemicals plant near Lawrence, Ky. Output will go to commercial users and to defense contractors manufacturing high-energy fuels for jet aircraft and missiles.

•

Terpene Esters: Heyden Newport Chemical Corp. will build a plant near Pensacola, Fla., to produce terpene alcohol esters used as odorants and flavoring agents. Completion is scheduled for late 1957.

•

Zirconium: Wah Chang Corp. is planning a $1-million expansion of its Albany, Ore., zirconium plant. Production target will be 550,000 lbs./year, a 38% increase over the plant's former 400,000-lbs./year capacity. New facilities should be ready by early 1958.

•

Polyethylene: Canadian Industries Ltd. will double the capacity of its Edmonton, Alta., polyethylene plant to 400,000 lbs./year. Construction will get under way later this year.

COMPANIES

Baker Platinum of Canada Ltd. (Toronto) will acquire all the assets of Goldsmith Bros. Smelting and Refining Co. Ltd., Canadian metallurgical firm. Goldsmith Bros. will continue in operation as a wholly owned subsidiary of Baker.

•

The Tennessee Valley Authority will close down its phosphate plant at Wilson Dam. Reason: the Army no longer needs the organic phosphate nerve-gas component the plant makes. Production will be stopped Aug. 1.

•

A merger of Spencer Kellogg & Sons, Inc., with Beacon Milling Co., Inc. (Cayuga, N. Y.), has been approved by Spencer stockholders. Spencer will exchange 256,834 shares of its treasury stock on the basis of 1.3 shares for each Beacon share. At current quotations, Kellogg stock is valued at about $4.4 million.

FOREIGN

Chinese Trade/Italy: The Italian government has loosened some of its controls over trade with Communist China. Now some products, including chemicals, which were formerly embargoed can now be freely exported to China.

•

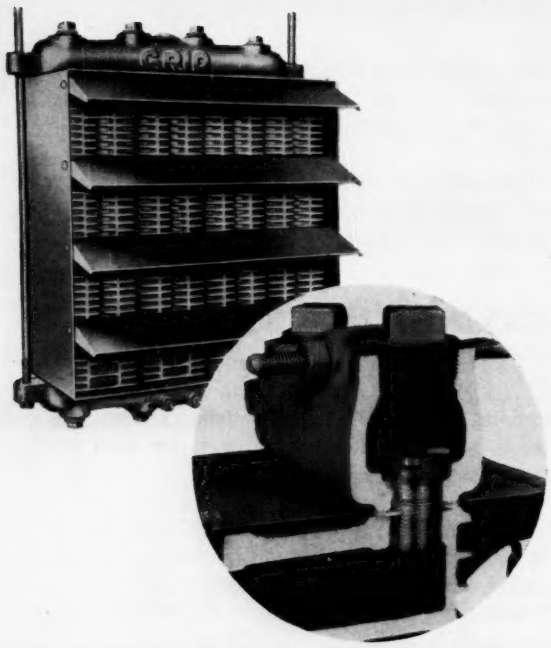
Urea/Netherlands: The Compagnie Neerlandaise de l'Azote, one of the leading Dutch producers of fertilizers has put a urea plant into operation in Sluiskil (Zeeland). The company now makes ammonium sulfate and potassium nitrate and is on the verge of going onstream with its fifth ammonia installation.

•

Dyes/Egypt: The Egyptian Ministry of Industry has decided to establish an indigo dye plant at Aswan, in upper Egypt, before the end of 1957. It will use local raw materials. An allocation of $28,500 has been established in the current budget for this project.

•

Pharmaceuticals/United Kingdom: Name changes are in order for Smith, Kline & French subsidiaries abroad, including one in the United Kingdom. After marketing its products for years through Menley & James Ltd., a subsidiary of A. J. White Ltd., SKF has bought the parent company, will now change its name to Smith Kline & French Laboratories Ltd.



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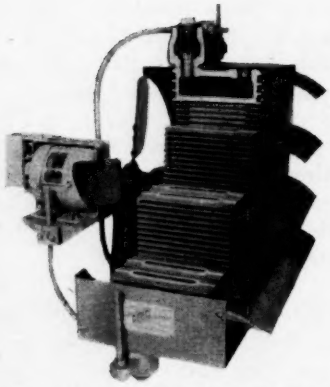
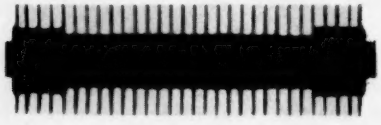
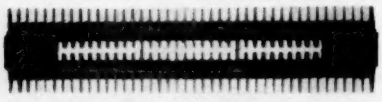


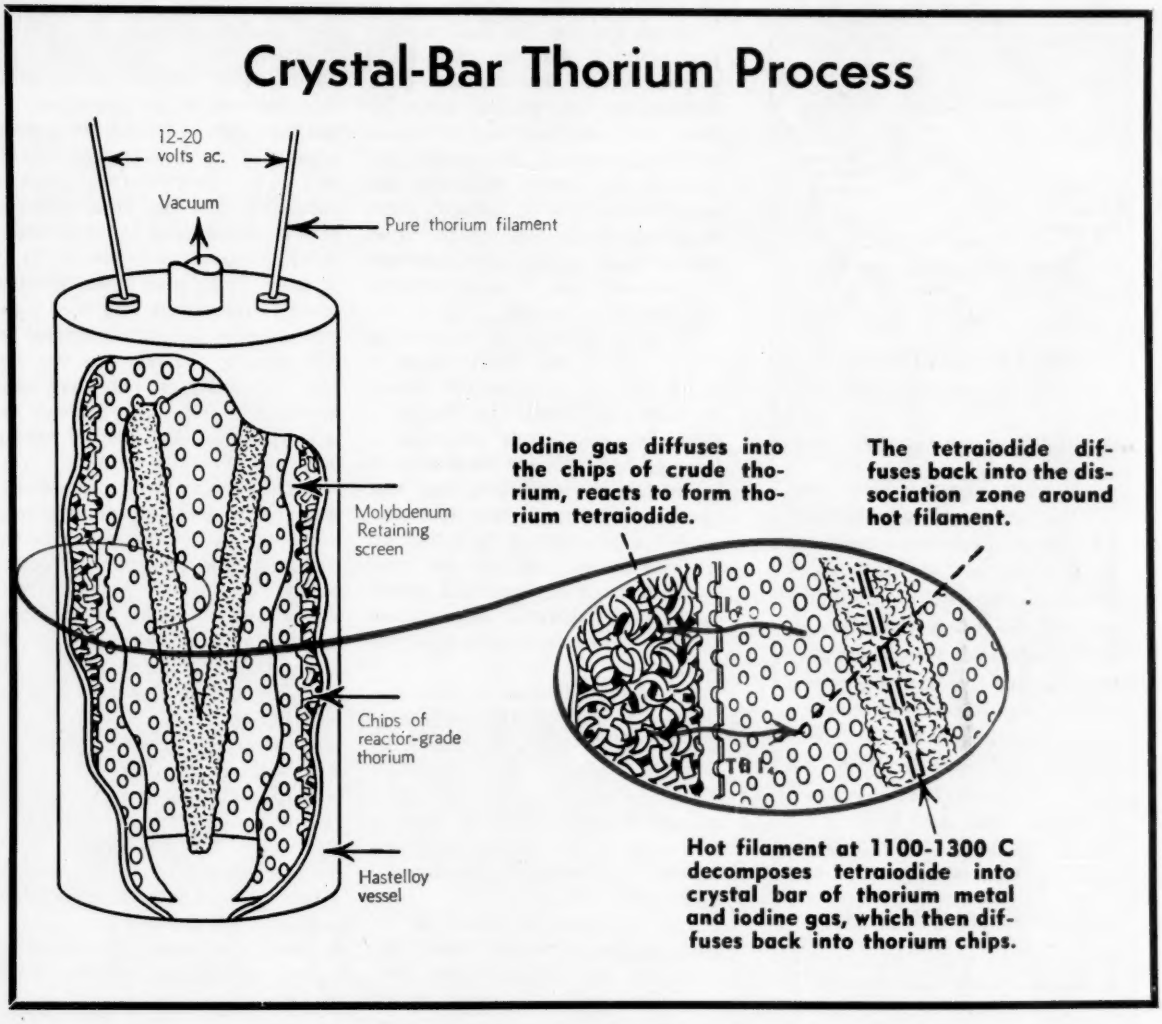
Cut-away view of Model 2000 GRID Unit Heater . . . note double steam chambers in each fin section and wide fin spacing . . . fins are cast integral with steam chamber.



All cast iron one-piece, single chamber fin section used in Model 1000 and Model 1200 GRID Unit Heaters . . . note wide fin spacing and ample radiation surface.



All cast iron, one piece, double chamber fin sections are used in Model 1500 through models 3000 GRID Unit Heaters, all GRID Blast Heaters and all GRID Radiators. Wide fin spacing prevents clogging by lint or dust . . . finned surface is easily cleaned . . . straight through air passage reduces resistance. Steam inlet at top serves both steam chambers permitting quick, even steam distribution. Outlet section at bottom serves both steam chambers permitting quick condensate discharge. Inlet and outlet openings are 1" P. T.


Crystal-Bar Thorium Process
12-20 volts ac.
Vacuum
Pure thorium filament
Molybdenum Retaining screen
Chips of reactor-grade thorium
Hastelloy vessel
Iodine gas diffuses into the chips of crude thorium, reacts to form thorium tetraiodide.
The tetraiodide diffuses back into the dissociation zone around hot filament.
Hot filament at 1100-1300 C decomposes tetraiodide into crystal bar of thorium metal and iodine gas, which then diffuses back into thorium chips.

Getting High-Purity Thorium Off to Market

Sometime this September, Metal Hydrides (Beverly, Mass.) will start up the first commercial production of superpure thorium (*CW Technology Newsletter, June 29*). The plant will employ a specially engineered reactor (*see sketch above*) to refine reactor-grade thorium into "crystal bar" metal by the classic tetraiodide dissociation technique pioneered by A. E. van Arkel and J. H. de Boer.

Thorium isn't the first of the rare metals on which the iodide route to high purity has been tried. But unlike others—notably, titanium and zirconium—that, to date, have elected to follow more conventional metal-reduction techniques (e.g., the Kroll process), thorium appears to be better suited to the iodide dissociation method.* One reason: limited demands for the superpure metal can be satisfied by commercial production facilities that aren't much larger than laboratory equipment.

Tenfold Scale-Up: In Metal Hydrides' case, commercial production is only a tenfold increase of the experimental operation the company has been conducting during the past six months. The developmental unit turned out one 1-lb. batch/week; the production unit has a minimum capacity of one 10-lb. batch/week.

A major engineering consideration in scaling up the corrosive iodine process was the selection of sturdier materials of construction to replace the glass components used in the laboratory equipment. Chosen for the key parts of the new reactor: an outer shell of Hastelloy, a perforated inner retaining screen of molybdenum,

*The tetraiodide process isn't ready to be counted out of competition in titanium and zirconium production. Kennecott Copper's interest in the iodine route to titanium (*CW, Aug. 18, '56, p. 58*) is well known; Australia's Commonwealth Scientific & Industrial Research Organization has developed a zirconium tetraiodide process (*CW, Feb. 2, p. 58*).

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Simple Process: The batch refining process starts with the charging of chips of "crude" nuclear reactor-grade thorium into the annular space between the outer shell and perforated retaining screen of the reactor. The vessel is then sealed, evacuated and heated to 450-500 C. Initially, Metal Hydrides will heat the reactor in an electric furnace, may later substitute a molten-salt bath if closer temperature control is needed.

When the reactor is up to operating temperature, a measured amount of iodine vapor is passed into the vessel. As soon as it diffuses into the chips, the iodine reacts with the metal to form gaseous thorium tetraiodide. A heated filament of pure thorium wire (the new reactor will have four) suspended in the center of the cylindrical retaining screen dissociates the tetraiodide. Crystals of pure metal deposit on the wire, free iodine vapor diffuses back into the crude chips to repeat the cycle.

Temperature control is vital, says MH, since any cold spots (below 450 C) would cause thorium tetraiodide to condense, thereby interrupting the gas transfer necessary for the reaction. Evacuation to a low pressure is also needed to promote the time-consuming, gas-diffusion, crystal-building reaction cycle.

Typical results of crystal-bar refining: oxygen is reduced from 1,000-3,000 ppm. to less than 50 ppm.; iron, from more than 1,000 ppm. to less than 30 ppm.; other metals and nonmetals, from hundreds of ppm. to less than 40 ppm. Many go to 3 ppm. or less.

Limited Batch: Though 10 lbs./week sounds like low capacity for a commercial production unit, it's probably near optimum for the crystal-bar process. Some factors that limit the size of an individual run:

- Electrical power input—the current must be increased gradually from 20 to 150 amps. to maintain the dissociation temperature of 1100-1300 C as the filament grows in diameter. Normal voltage: 12-20 volts ac.
- Crystal structure—the deposit of high-purity thorium crystals, less compact than that of titanium or zirconium, is easily broken.
- High specific gravity—thorium's density of 11.4 (about the same as that of lead) increases the chances of filament breakage as the crystal deposit grows.

MH says it's prepared to build another unit if sales of crystal-bar thorium warrant an expansion. But just how high its production could go appears to be largely dependent on how great a premium the product can command. MH has been selling its pilot-produced metal for about $500 a lb. ($1.10/gram on orders for 10 lbs. or more, $1.25/gram in smaller quantities) to researchers who need superpure thorium for nuclear reactor and fuel element research. But the company envisions cost reductions of as much as 25-50% once the new unit is in operation, and ultimate tonnage processing cost of $10-15/lb.

Total thorium metal production is not large in terms of annual tonnage —less than 1,000 tons are produced each year. And the bulk of the present output consists of alloy-grade metal selling for $15-20/lb. for use with magnesium, other metals in aircraft construction. Reactor-grade thorium (still largely experimental) is priced by AEC at about $20/lb., but prices may run 50-100% higher in commercial sale.

Heightened interest in thorium for nuclear reactor applications *(CW, April 27, p. 94)* may catapult it into the category of large-volume strategic metals, such as uranium and zirconium. If a big demand for superpure thorium should materialize, the crystal-bar process will stand ready to deliver such purity—at a price.

Gasification Answer?

Results of pilot production of synthesis gas from low-grade, low-cost coal were recently disclosed by the Institute of Gas Technology, an affiliate of Illinois Institute of Technology (Chicago). The process—gasification of pulverized coal under slagging conditions at above-atmospheric pressure—is believed to be at least partial solution of the problem of manufacturing an inexpensive substitute for natural gas.

To minimize the effect of coal quality and ash content on the efficiency of the carbonization process, IGT has concentrated on a process requiring no special operation for the carbonization, devolatilization or size

hi-fax® Vacuum-Forming 'Natural'

HI-FAX—This new linear ethylene polymer offers you a combination of properties for vacuum-forming never before available in a low-cost plastic. Here's what Hi-fax sheeting for vacuum-forming offers:

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- **GOOD ELECTRICAL PROPERTIES**
- **CHEMICAL RESISTANCE**
- **LOW MOISTURE PERMEABILITY**

Now available for commercial production runs, this new Hercules material is already the talk of the plastics industry!

BIGGER AND MANY WAYS BETTER—The four-cavity toy package and a light diffuser panel shown here were both vacuum-formed with Hi-fax sheeting manufactured by Gering Products, Inc., Kenilworth, New Jersey. Light diffuser was manufactured by Tiger Plastics, Brooklyn, New York; Toy package by Vacuum Molding, Inc., Boonton, New Jersey.

HERCULES

Cellulose Products Department
HERCULES POWDER COMPANY
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CPS7-3

alteration of a low-grade starting material. Its gasification unit is designed to produce synthesis gas—consisting essentially of carbon monoxide and hydrogen—that can be upgraded by methanation to fuel-gas quality. Here's how it works:

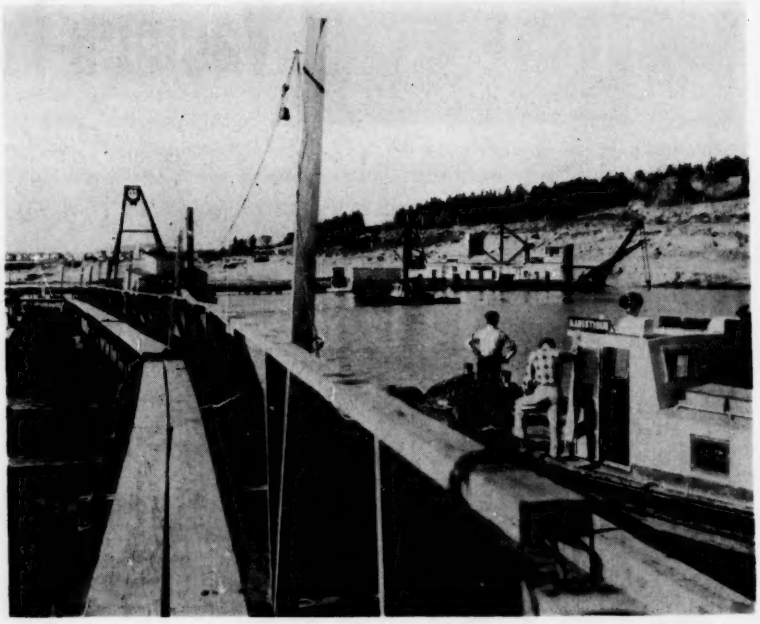
Low-grade coal is reduced to coarse granules, introduced into a carrier stream of compressed air and steam, which infiltrates the porous granules. When the resulting suspension is discharged through a nozzle into a cyclonizer, gas-impregnated granules are ruptured by internal pressure, are further reduced in size by attrition of rapid vortical motion.

As the coal-air-steam suspension and additional superheated steam are introduced separately into a second cyclonizer at high temperature, the fine coal particles (65-85% are minus-200 mesh) are softened and partly devolatilized by partial combustion. The coal suspension is then enriched by the addition of compressed oxygen and passed into a reaction chamber in which the carbonaceous material is gasified at above-atmospheric pressure. The ash flows as a molten slag into a catchpot.

In pilot-plant tests with Illinois noncoking coals and West Virginia low and high ash-fusion coking coals, 90-95% of the carbon was gasified at pressures of 5 to 7.5 atmospheres. Product gases ranged from 70 to 80% H_2 and CO, with an H_2:CO ratio generally greater than 1. This ratio could be increased to 2 or 3, says IGT, by water-gas shift of a portion of the synthesis gas.

Significance of the principal variables as determined by the pilot studies:

- Ratio of gaseous oxygen per unit weight of coal controls the relative extent of partial combustion reactions, which supply heat for the endothermic gasification.
- Inlet oxygen concentration in the gasifying medium (steam-free basis) determines nitrogen dilution and, therefore, the heating value of the make gases.
- Ratio of steam to coal is of intermediate importance in its effect on carbon conversion, relative proportion of CO and H_2 in the make gas.
- Gasification pressure largely controls suspension density and gas residence time, has some effect on conversion efficiency.



Dredge (right, background) clears open-pit asbestos deposits.

Dredging an Asbestos Lode

Though dredges aren't likely to become standard mining equipment, the one pictured above at Black Lake, Quebec, Can., is proving that there's more than one way to dig an open pit. By next summer, it will have removed enough mud and silt to convert the 500-acre lake into a 100,000-tons/year asbestos mine for American Smelting & Refining Co.

The monumental task of rerouting a river and of dredging and digging some 37 million cu.yds. of material out of Black Lake (more than twice as much as that being taken out of the St. Lawrence Seaway) is being handled for Asarco by a Canadian subsidiary, Lake Asbestos of Quebec, Ltd. The goal: three submerged bodies of chrysotile ore large enough to comprise a 7% addition to the asbestos reserves outside the Iron Curtain.

River Rerouted: Before the dredging and draining work could get under way, Black Lake had to be separated from the Becancour River drainage system. The Becancour was diverted to a new channel bypassing the lake; interception ditches were dug to carry surface runoff to the rerouted river.

To provide for the disposal of solid wastes and to allow the return of water to the lake, the company diked off disposal areas 3-4 miles away. Mud and silt are picked up by a 30-in. suction dredge, pumped across the lake via pontoon pipeline. A connecting 30-in. steel pipeline on shore carries the waste to disposal areas at a rate of 50,000 gpm. Water draining from the mud is returned to the lake, will be drained off into the river when dredging has been completed.

Mining at 200 ft.: When the surface of the lake has been lowered 200 ft., the dredge will put their entire navy out of business—at least, in this location. Initial mining operations at "A" ore body on the east side of the lake are scheduled to begin in mid-'58. A second deposit—"C" ore body—has been located beneath a granite island on the west shore; a third is indicated in the center of the area.

Ore will be processed into all grades of asbestos—from the longest to the shortest fibers—in a new $9.2-million mill now under construction adjacent to the open pit.

To Asarco, the $32.5-million Black Lake project represents a challenging opportunity to put its large capital and engineering resources to work in a new field—and provides a step toward diversification of its industrial interests.

SPECIAL FROM MONSANTO INORGANIC

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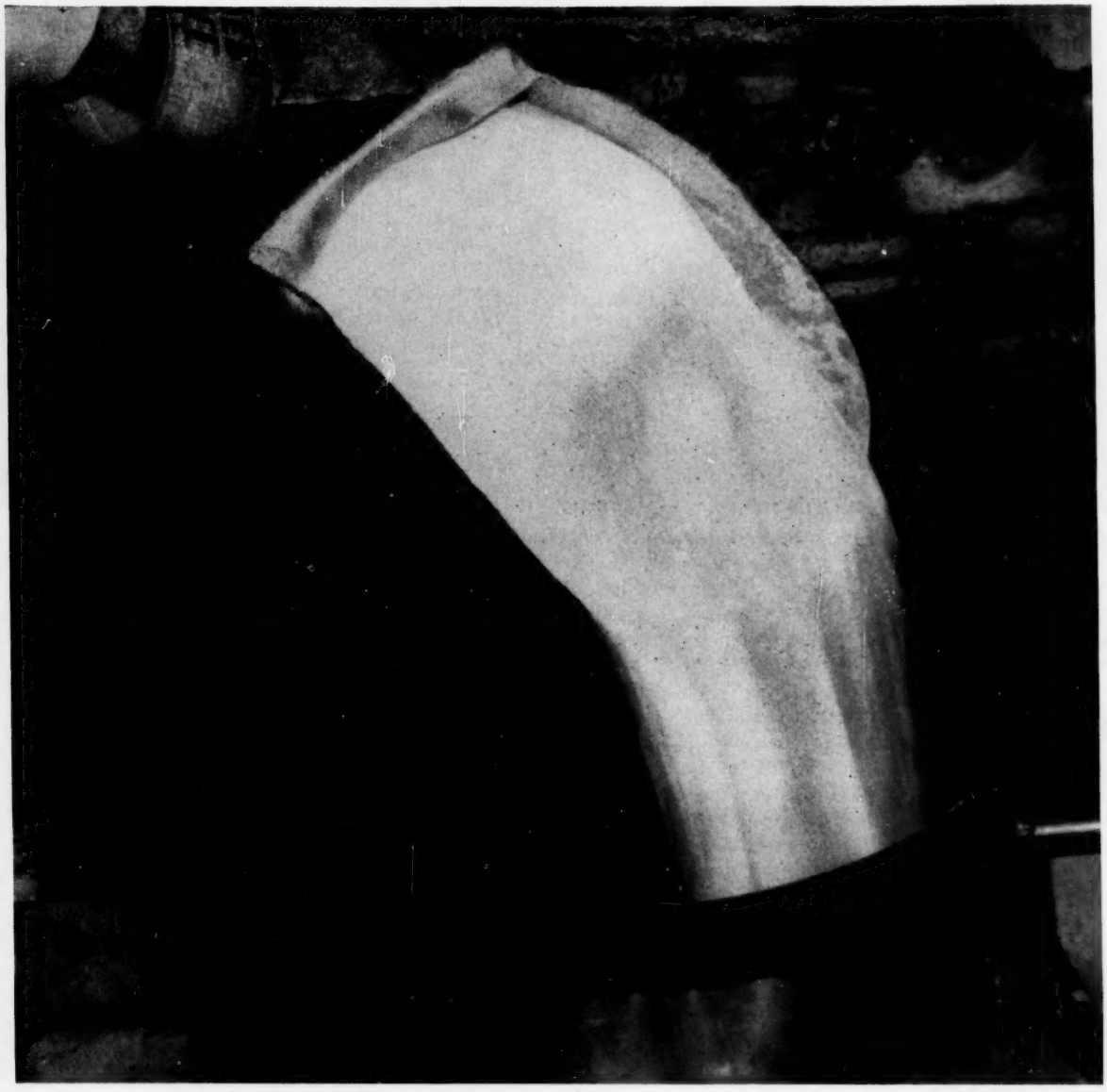

Monsanto sodium bisulfite is a free-flowing, non-caking white powder that can be weighed out easily and exactly. No elaborate gas proportioning system is needed.

Monsanto sodium bisulfite contains 66% sulfur dioxide that is readily released with mild acidulation. Because it is a non-caking, free-flowing powder, there are no cylinders to handle, store or return. If you require a strong reducing agent, a commercial bleaching agent, or a sterilizing agent, write for our Technical Bulletin No. I-160 on sodium bisulfite. Inorganic Chemicals Division, Monsanto Chemical Company, Dept. M, 710 N. 12th Boulevard, St. Louis 1, Missouri. In Canada: Monsanto Canada Ltd., Montreal.

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Monsanto Inorganic . . . unfailing source of liquid caustic potash, sodium bisulfate, sulfuric acid, muriatic acid, chlorosulfonic acid, nitric acid and alum.

Camera shops (above) and other retail outlets contribute heavily to the estimated $260 million/year

Selling Photo Film: Where 42 Million

THE HEARTS of this country's 2 million "serious" amateur photographers were gladdened last week by the appearance on the market of the fastest roll film yet—Eastman Kodak's Royal X Pan. Boasting an ASA number 1600—which makes it four times as fast as the fastest previously available roll film—the new material is available in popular roll sizes.

The trend to speed and the trend to color are the outstanding features of what's happening in the U.S. photographic film market. The moving force, of course, is the amateur photographer. Largest single group of film customers, week-end photographers and their more serious amateur fellows, number 42 million strong, bought the lion's share of the $260 million worth of film estimated to have been sold last year in this country. A factory-level value, this figure includes roll, sheet and movie film, but not X-ray and graphic-arts products.

Film has thus become one of the biggest sellers—in spite of its manufacturing complexities—among chemical specialties. Yet, because it is largely the business of a handful of firms, few nonparticipating chemical manufacturers are fully aware of its complexity and size.

That is a situation most film makers would prefer to continue. *CW,* in checking with virtually every film maker in the world, found it almost impossible to pry loose either market figures or data on the new and complex organic chemicals in today's popular films.

HOW THEY RANK

Eastman Kodak is by far the biggest factor in the film industry. Although it is not the biggest seller in every country, it is tops in most, and strongly out front in the over-all picture. In the U.S., for example, Kodak probably sells 85% of all amateur black-and-white film.

Thanks largely to a set of strategically placed foreign subsidiaries, Kodak is also the leading seller in many foreign areas. These manufacturing units were set up in the early years of the Kodak company, most of them around the turn of the century. Today, Kodak has major plants in England, France, Germany (making cameras only), Australia and Canada.

The film manufacturer ranking second in world sales—a weak second—is Germany's Agfa (a division of Farbenfabriken Bayer), the leading seller in Germany and important in many other markets. Next are the U.S.'s Ansco, United Kingdom's Ilford, Belgium's Gevaert (not necessarily in this order), and then companies like Japan's Fuji, Italy's Ferrania, probably some of the behind-the-Iron-Curtain plants. (*Individual*

LIONEL CRAWFORD

in sales (factory level) of photographic films.

Amateurs are King

foreign film industries are detailed on p. 34.)

Kodak's chief competitor in the U.S. is Ansco, a division of General Aniline & Film Corp. The third big factor in the U.S. film business—Du Pont—eschews the amateur market entirely, but is very strong in professional cinema film, graphic-arts film, and X-ray film, as well as some other professional and commercial types. The bigger European film makers are also selling film in the U.S., but still on a limited scale. Some think they never will be much of a factor here, Kodak being too formidable. They believe that these foreign companies are selling in the U.S. merely to get some needed dollar credits, and are willing to sell at a low profit margin just to convert their money. Agfa, however, told *CW* it is bringing its entire line in, and will stay for the long pull (*CW, April 6, p. 124*). Gevaert, which is having some success through price competition, particularly in private-label and professional (including cinema) sales, may also stay around and show a good profit.

Fast Crowd: Ansco accounts for about one-third of GAF's sales, or about $45 million worth, and has high hopes of capturing a big share of the booming color film business. The company has two new color films, Anscochrome (out in 1955) and Super Anscochrome (out in the spring of this year). High film speed (sensitivity to small amounts of light) is their big talking point. Anscochrome has a rating of 32 ASA (American Standards Assn. exposure index), the same as Kodak's Ektachrome; and Super Anscochrome has a rating of 100 ASA, the same as the old Super XX, Kodak's fastest black-and-white roll film until it introduced Tri-X (200 ASA) in 1954.

Claims Ansco: Except for film speed and price (Super Anscochrome costs 50¢ more per roll than regular), the Super and regular are virtually the same, can even be spliced and processed together. Both films seem to be somewhat preferred over Ektachrome, and are gaining in sales. Ansco's chief problem currently is how to make and distribute enough of the Super to satisfy demand, a situation it expects to have solved by mid-August.

The new Super Anscochrome is not recommended for use in simple box cameras, and it's unlikely that any of the newer, faster, color films are selling as much right now as Kodak's old stand-bys: Kodachrome (the most popular 35-mm. color positive film since its introduction in 1935) and Kodacolor (a color negative film, for making comparatively inexpensive prints).

Because they require no expensive projector, films that give prints are the most popular type of color films among ordinary snapshooters. Ansco has had no print material since its Plenicolor failed to prove itself in test markets a few years ago. Development of such a film, compatible in processing with Kodacolor and printable on either Ansco or Eastman material, is now a high-priority research goal at Ansco.

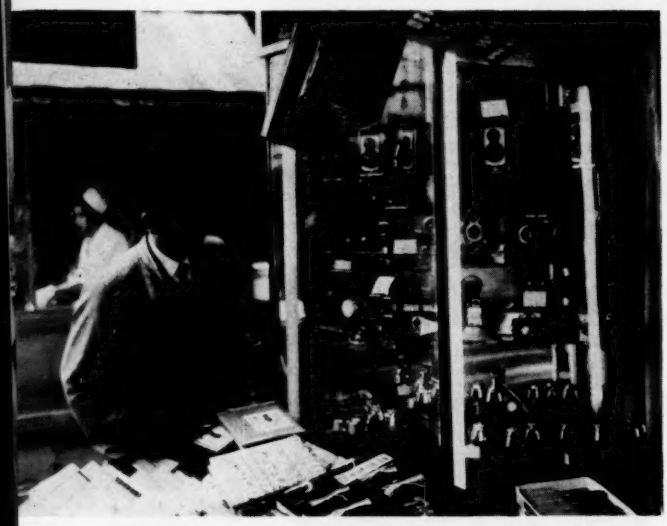
COLOR PROCESSING

Kodak has suffered little from the consent decree it accepted following the government's antitrust suit in 1954. By this agreement, Kodak stopped including the charge for processing of its Kodachrome film in the price of the film. Kodak still does about as much processing as it ever did, now handles most of all Kodacolor and Kodachrome processing. It provides special labels to dealers who sell them to customers, who then mail the film to Kodak.

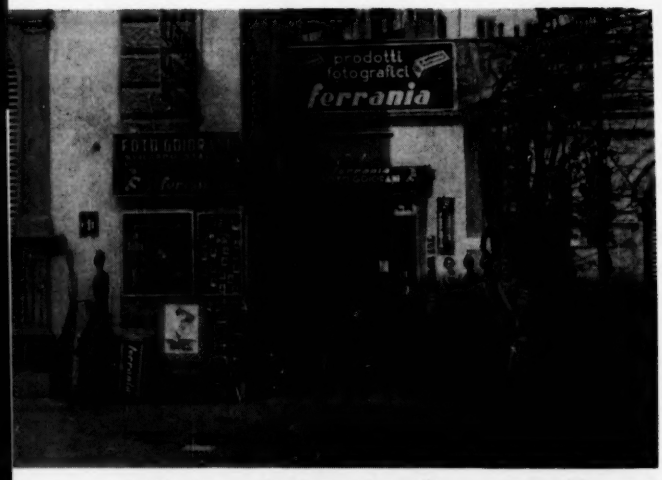
The 140-160 processors now working (biggest: New York's Technicolor-Pavelle, Los Angeles's Drury) have been skimming off the increased business created by rises in color film sales. It's expected that color film processing will eventually become as decentralized as black-and-white processing.

Color film sales to amateurs are greater than those to professionals, although here, too, demand for color has been increasing.

School photographers, one of the more important segments of the professional film market, are taking more color. The photographers go to schools, shoot individual pictures of children, and offer them assorted prints at about $2/kit. Some photographers have added



JAPAN: Fuji and Konishiroku are big sellers.



ITALY: Ferrania has virtually a monopoly.

AUSTRALIA: It's Kodak 10 to 1 over competition.

color transparencies in little "peepscopes," and others are considering adding a color print—which would up the kit price.

SALES PICTURE

In professional sales, which include studios, motion picture companies, the press, industrial organizations (General Motors has one of the biggest photographic organizations outside of Hollywood), etc., service is the most important factor. Except for Gevaert, price competition has not been important.

Professional picture film is an important business, accounting, for example, for 11% of Eastman's domestic sales. Eastman supplies over ¾ of the total 2 billion ft. of film used by Hollywood and television each year, provides virtually all the color film (not all color movies—Technicolor for example—use color film). The company's pro cine film sales have recently declined somewhat due to two trends: moviemakers are using less film now, and they are swinging from color to black and white. The latter is a reversal of the long trend toward increased use of color. A cost-cutting atmosphere is the chief reason. Because other firms are able to compete easier in black-and-white film (an area where Gevaert is again active), such a trend has a slightly adverse effect on Eastman's share of the market. The trend away from color in professional movie making is seen all over the world, except in Japan.

About 50% of all amateur film purchases are from drugstores, to which film is distributed, like toothpaste and aspirin, by jobbers. Some 6-10% of drugstores have complete photography departments, and these, like camera stores, are serviced directly by Ansco or Kodak.

In drugstores, and similar retail outlets, only about 15% of the customers ask for film by brand name. The other 85% simply ask for a size of film—usually 620. As a matter of fact, the brand-naming 15% generally won't mention the brand either, but will simply use the makers' designation, such as Verichrome or All-Weather. Too often, moans Ansco, the druggist simply reaches for the yellow box.

HOW THEY GREW

Looking back at the early history of roll films, it's difficult at first glance to see how things turned out as they did. Anthony & Scoville, the forerunner of Ansco, is the older company, having been established in 1842. It had the Goodwin patents on flexible base film, and successfully sued Kodak for patent infringement shortly after George Eastman had started his firm.

Several factors helped Kodak's growth in spite of Ansco's head start. Kodak has always been a heavy advertiser; in 1899, seven years after the company was organized, it was the nation's biggest advertising spender. Also, during much of its history, Kod-

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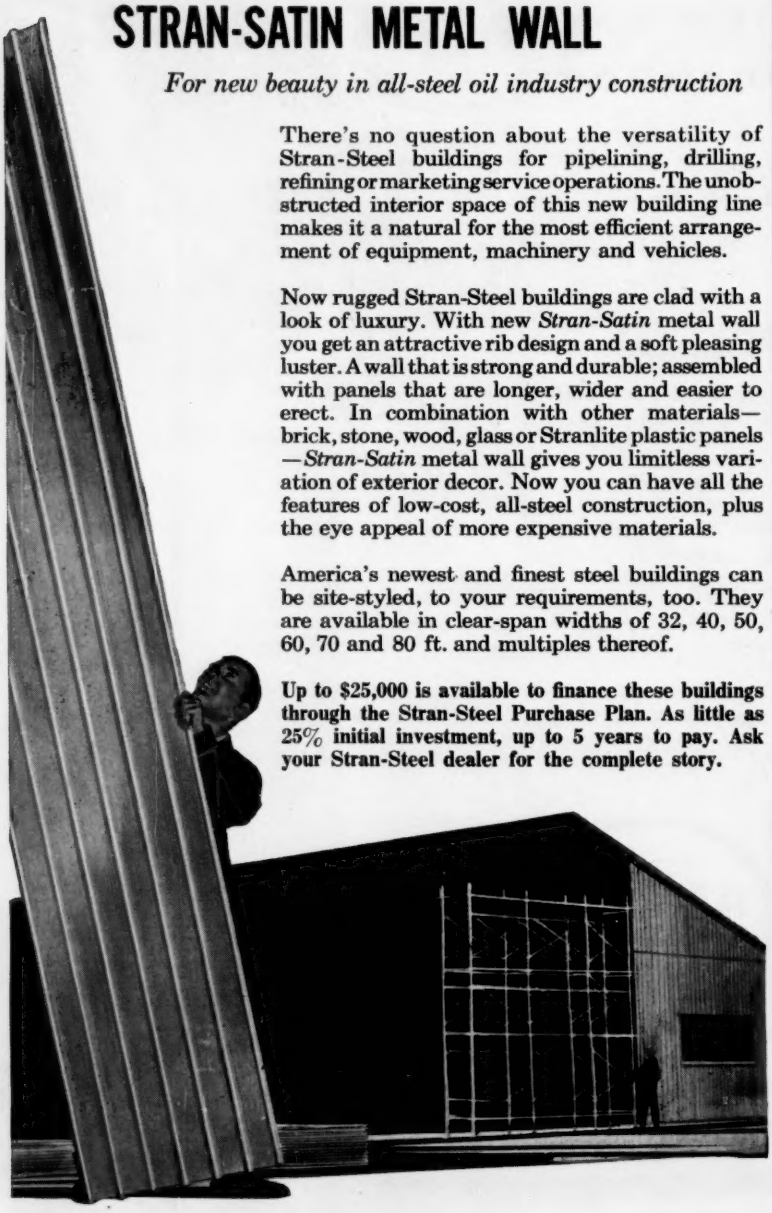

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24

ak has been exceedingly well managed. It has been cited several times as one of the best managed in the country. Ansco, on the other hand, has always been plagued by shifting ownership. In 1928, Agfa bought the company, held it until it was seized by the government in 1942. Now, again, with the legal difficulties over the government's proposed sale of GAF, the company is up in the air again.

Perhaps Kodak's greatest advantage, however, is its broad distribution. There are few parts of the free world in which anybody would have to travel far to find one of the yellow boxes of film.

What might turn out to be Kodak's most serious competition, is Polaroid Corp., which makes the Polaroid-Land camera with its picture-in-a-minute feature. Polaroid's sales are booming, and the company is on the verge of coming out with an ultrafast 2,000 ASA film, and is researching a color film. But Kodak and most of Polaroid's other competitors don't look for it to bite deeply into their current markets. (One reason for Kodak's calmness, Polaroid buys much of its material from Kodak.)

WORLD PICTURE

That's the current U. S. market picture. Here's a country-by-country rundown on the photographic business around the world.

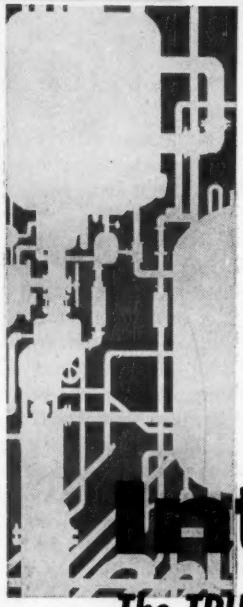
GERMANY

Germany's $95-million/year film industry is dominated by Agfa, the world's second-biggest film maker (*CW, April 6, p. 124*). Agfa, along with other important German film companies, such as Dr. Schleussner (Adox film), Perutz, Leonard, Mimosa, Tura Kranseder and Hauff, are protected from foreign competition by a 24% tariff on film. Kodak, which makes only cameras in Germany, therefore finds it hard to compete.

Last year, Agfa's film sales were 79% black and white (including cinema); the rest, color. Most popular Agfa color film is the reversal type, for making prints. The firm is currently the only German company with a reversal color film.

UNITED KINGDOM

The two big film names in the United Kingdom are Ilford and Kodak, which equally share about



ACETALDEHYDE AMMONIA
ACETOPHENONE
ACETYL CHLORIDE
ANISIC ALDEHYDE
ANISYL CHLORIDE
ANISYL CYANIDE

BENZALACETOPHENONE
BENZHYDROL
BENZHYDRYLAMINE
BENZHYDRYL CHLORIDE
BENZOPHENONE TECH.
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CAPRYLOYL CHLORIDE
p-CHLORBENZHYDRYL CHLORIDE

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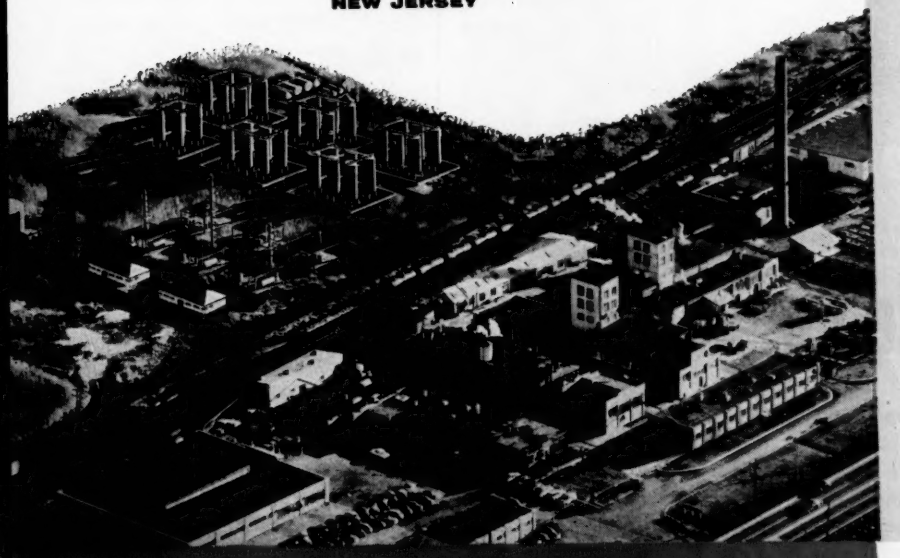

DIBENZYL ETHER
DICYCLOHEXYL CARBINOL
DICYCLOHEXYL KETONE
p, p'-DIMETHOXYBENZOPHENONE
DIPHENYL ACETONE (unsym)
DIPHENYL METHANE
ETHYL FORMATE
ETHYL MALONIC ESTER
ETHYL PHENYLACETATE
beta IONONE
ISOVALERIC ACID
LAUROYL CHLORIDE
p-METHOXY PHENYLACETIC ACID
METHYL HEPTENONE
METHYL PHENYLACETATE
MYRISTOYL CHLORIDE
PALMITOYL CHLORIDE
PHENYLACETIC ACID
PHENYL PROPYL ALCOHOL
PHENYL PROPYL CHLORIDE
POTASSIUM PHENYLACETATE
PROPIONYL CHLORIDE
SODIUM PHENYLACETATE
n-VALERIC ACID
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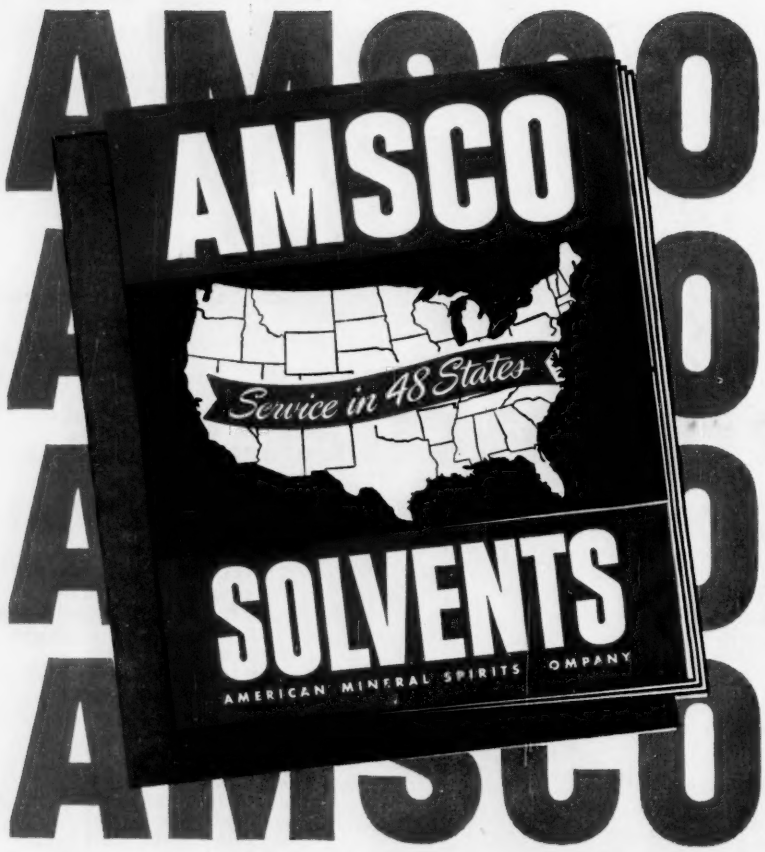

Free guide for solvents

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95% of the market. The third force is Agfa, which, in spite of a 24% tariff, is able to keep its prices slightly under those of Ilford and Kodak.

Sales of color films in the U.K., as in most parts of the world, are increasing. One of every 10 pictures taken is now taken in color. Kodak must import color film from the U.S. All color film now sold in Britain, excepting Agfa color, has been for transparencies, but Kodak expects to have Kodacolor in Britain by year's end.

Ilford, weaker in color film than either Kodak or Agfa, has, however, what is recognized as one of the best lines of black-and-white film in the world. It includes Ilford HPS, a film whose 400 ASA rating is double that of Kodak's Tri-X.

The biggest thing holding back the film industry in Britain is the 25% purchase tax on films, and the 60% tax on cameras.

FRANCE

Nine firms divide the $85-million French film market, but Kodak-Pathe, Eastman's almost wholly owned French subsidiary, gets the bulk of it. Following Kodak-Pathe are Gevaert France, Lumiere, Bauchet & Co. and Guilleminot Boespflug.

In the past four years, sales of color film in France have doubled, while black-and-white film sales have increased 20-25%. Kodak makes its film base and color film in France, but Gevaert brings both types in from Belgium.

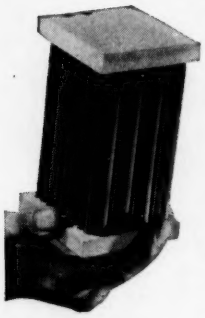
ITALY

A virtual monopoly of the Italian film market is held by Ferrania, which, with 3,000 employees, is one of Europe's larger manufacturers of photographic film. The company is controlled by Gianni Agnelli, but the auto firm, Fiat (in which Agnelli also has a large interest), is one of Ferrania's biggest stockholders.

Ferrania spokesmen don't consider the present Italian tariffs on films as "protectionist," but admit that they pretty well keep competition out. At present, U.S. brands are almost impossible to get—particularly color and high-speed black and white.

SWITZERLAND

Switzerland's one film maker, Tellko, can't keep up with imported brands.



An important message

to the man who thinks his air pollution problem is too difficult—or too expensive—to correct

Too often an air pollution problem exists today for one reason only: The company concerned does not yet know there is now at hand an efficient, effective method of correcting it—often at an actual saving through waste heat recovery.

The method is catalytic oxidation, and the firm that makes this development possible is Oxy-Catalyst, Inc.

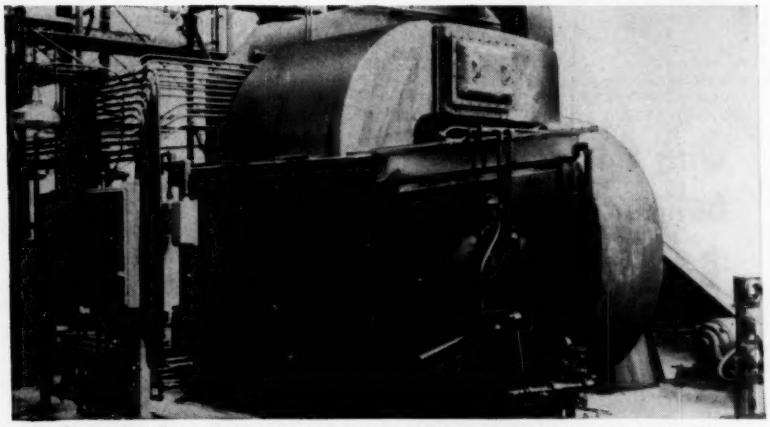
Catalytic oxidation works by "burning" harmful and irritating combustible contaminants in an exhaust stream at temperatures far below their normal ignition points. It provides close to 100% cleanup of foul-smelling fumes and odors. It reduces fire hazards and maintenance problems by eliminating troublesome condensates in oven and furnace exhausts.

Thus Oxy-Catalyst installations can not only control air pollution. They can also be used to release the latent heat energy in waste and process gases. And they can sometimes do both at once.

A More Efficient Catalyst

The key to successful catalytic oxidation is, of course, the catalyst itself. Features which make the Oxycat unique are:

- *The combination of platinum and alumina, chosen from hundreds of elements and compounds as the most active and long lasting catalytic agent*
- *The carrier, a high-grade porcelain selected for its strength, chemical inertness, and resistance to high temperatures*
- *The patented method of applying the catalyst to the carrier*
- *The patented mechanical design of the Oxycat itself*



Oxycat Installation on Standard Oil Company of California's phthalic anhydride unit at Richmond, Calif.

The result of this combination of features is a catalytic unit with exceptionally long life at high efficiency. Oxycats are strongly resistant to thermal shock—to contaminating agents and clogging. There's no problem of frequent cleaning or reprocessing. Oxy-Catalyst installations are still functioning at high initial efficiency after over 20,000 hours without maintenance or servicing.

Already in Wide Use

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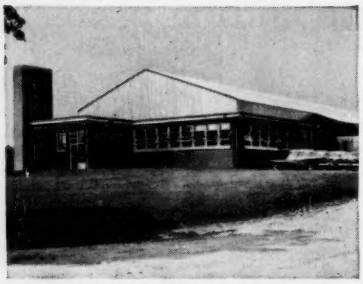

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SPECIALTIES

As in many areas, Kodak is the most popular line (Kodak doesn't have a plant in Switzerland, but does have a color processing lab). The customs duty, $9.20/100 kg., is too low to keep out any imports. Switzerland imports about $2.85 million worth of film per year—about half of it from the U.S. It exports about $433,000 worth. It is estimated that tourists purchase 20% of the film sold in Switzerland.

Tellko specializes in making photographic paper, but has extended its manufacturing to color film. The company does a fair business in West Germany, Italy and Brazil, as well as at home, but has trouble matching the advertising and promotion budgets of its competitors.

BELGIUM

Gevaert's plant in Antwerp is one of the world's biggest film plants, and forms the whole of the Belgian film industry. As might be expected, much of Gevaert's film is exported. Belgian film exports for 1956 were $20.9 million.

Last year Belgium exported $1.4 million worth of X-ray film, $360,000 worth of black-and-white roll film, $1.15 million worth of cinema film to the U.S. Here, as in many parts of the world, Gevaert competes on a price basis. The company does a lot of private label work; has such accounts as the private label film for Macy's, Sears-Roebuck, Davega's. Compared to a usual price of 55¢ for a roll of 120 black-and-white film, Macy's sells its own brand at 3 rolls for 80¢.

COMMUNIST BLOCK

The major film production behind the Iron Curtain is in East Germany. The Communists seized a large Agfa plant at Wolfen (which employs 5,000 workers, compared with 8,000 film-making employees at Kodak's mammoth Kodak Park in Rochester, N.Y.). An old Kodak plant at Copenick (a Berlin suburb) has also fallen into Communist hands. The product of the Kodak plant was marketed under the Kodak name a while following the war, but has since been sold under the Deko name. Film made at Wolfen is still sold under the Agfa name.

Film is also being made in the Soviet Union, but production details are sketchy. It is believed that the Sovkino plant at Kazan is the largest in the U.S.S.R. Except for a small amount of film exported to South America, little effort has been made to ship film through the Iron Curtain.

JAPAN

Japan's film business doesn't match its camera business as a source of export sales. Japan's two film manufacturers produced last year about $38 million worth of film, of which only 2% was exported. Film manufacture, unlike the making of precision cameras, is not a field in which Japan can shine. Film making is a highly automated industry, where capital investment in specialized machinery, and the cost of raw materials are more important than labor costs.

Because of rigidly limited foreign exchange allocations, little film is imported into Japan. Of the two firms that split the Japanese market, Fuji Photo Film Co. is the larger; it produces about 75% of the cinema film, 60% of the roll and cut film and 65% of the X-ray film. Both Fiji and its rival, Konishiroku Photo Industry Co., make their own film base.

Eastman Kodak is not a force in Japan, except in color movie film—a market it pretty well dominates. Eastman had a plant in Japan until it was seized at the beginning of World War II. And because of Japan's fierce nationalism, which discourages foreign investment, Kodak has made little effort to reacquire the plant.

Color film is popular in Japan, particularly for movies. About 88% of the cinema film (as well as 12% of still film) is color.

AUSTRALIA

Kodak (Australasia) Pty., Ltd. (Melbourne), the only company making sensitized photographic material in Australia, outsells its closest competitor by a factor of 10. The firm is jointly owned by the U.S.'s Eastman Kodak Co., which has a little more than 50% of the stock, and the Australian firm, Baker & Rouse.

Ilford, the English film maker, is Kodak's strongest competitor. It is now investing $2.4 million in what will be Australia's second film plant, at Melbourne. (Like Kodak, Ilford will import its film base.) At the same time, Kodak is expanding, plans to build a second plant at Coburg, Victoria.

When you set your sights on better drum delivery, see SSIRCO

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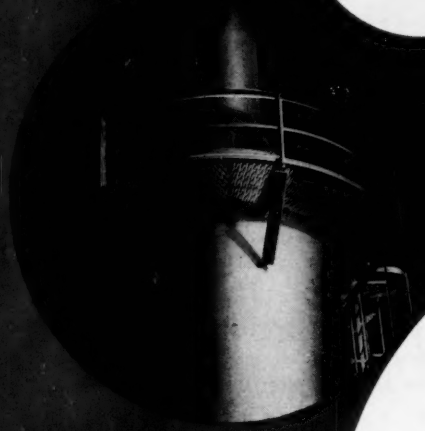


1—Average radiant transfer rate. **2**—Maximum deviation from average radiant transfer rate. **3**—Average and maximum transfer rate in convection section. **4**—Maximum tube wall temperature, radiant or convection. **5**—Maximum efficiency with specified excess air. **6**—Controlled thermal recirculation of flue gases to provide even heat distribution throughout full length of each tube and equalized heat distribution around each tube. **7**—Overload and corresponding transfer load. **8**—Design to provide: structural column supports · Ladders · Platforms · Tube Removal facilities, etc. **9**—Degree of assembly; of the furnace structure and of the heating surface.

PETROCHEM-ISOFLOW FURNACES

Washington
Newsletter

CHEMICAL WEEK
July 13, 1957

The flaming of the civil rights filibuster in the Senate is bound to stall Congressional action this session on bills affecting the chemical process industries. And even though all measures that started through the legislative mill this year will carry over to next January, passage of some bills is endangered. The longer the filibuster, the more bills that will go by the boards. Here are a few of the measures important to business that the Senate has on its calendar:

• Natural gas bill—to exempt local gas production from federal controls. Without a strong push from the White House, this bill is dead.

• Premerger notification—requiring merging companies to tell the Justice Dept. and Federal Trade Commission about merger plans 60 days in advance. This one has strong support, but time may run out before it can be voted on.

• OTC authorization—setting up the Organization for Trade Cooperation to police the General Agreements on Tariffs and Trade (GATT). Even supporters have given up hope for action this year.

• TVA bonds—allowing the Tennessee Valley Authority to finance new facilities within its present boundaries via bond issues. This bill, which had a fair chance of passage, is dead until '58.

• Niagara power—dividing power to be generated from new hydro facilities. Bill had good chance of passage since power users have agreed to the split-up; enactment, now, won't come in '57.

• Welfare and pension fund regulation—calling for fuller disclosure on how funds benefiting workers operate. Chances are slim for passage in '57.

Subjects of other bills jeopardized by the filibuster: authorization of an FTC investigation of the newsprint industry; government insurance to atomic plant operators, to take care of damage claims following catastrophic accidents; tax law revisions designed to plug loopholes in the current law's tax treatment of bonds, stocks, insurance, pensions and annuities.

•

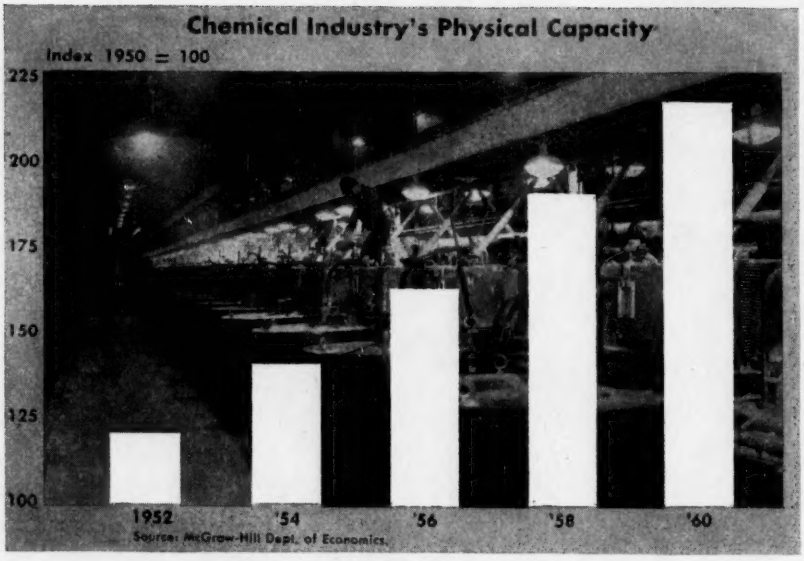
A just-approved bill that concerns the shale oil plant at Rifle, Colo., is now the center of a controversy. At issue: whether the Interior Dept. now has congressional approval to dismantle its shale oil pilot unit.

The Senate last week approved and sent to the White House a compromise appropriations bill which allows the spending of $135,000 this year for "maintenance" at the plant site.

Senate Appropriations Committee Chairman Carl Hayden (D., Ariz.) says the bill will not allow the government to dismantle the plant. On the House side, however, Armed Services Committee Chairman Carl Vinson (D., Ga.) and Rep. Eugene Aspinall (D., Colo.) say it would. Interior says it wants to use the money for maintenance—not dismantling.

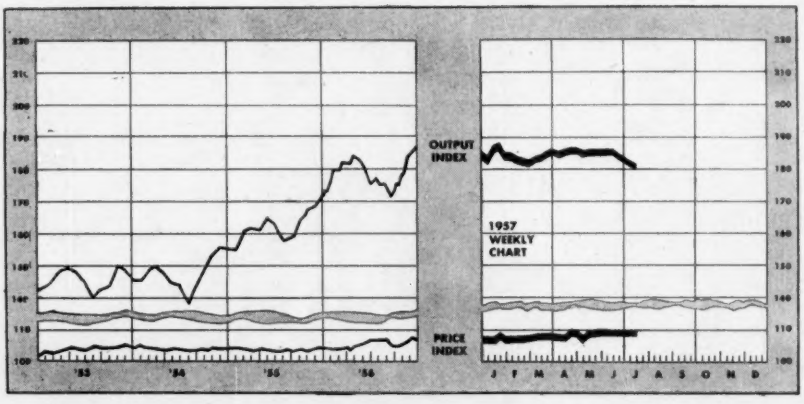
Charting Business

CHEMICAL WEEK
July 13, 1957



Capacity: 127% Growth in a Decade

THE CHART above provides an interesting measure of the chemical industry's growth. From 1950 to '60, capacity will have expanded a whacking 127%. Between '57 and '60 alone, the industry's capacity is expected to grow 22%, outpaced only by electrical machinery and nonferrous metals producers. Spurred on by such chemical segments as plastics, pharmaceuticals and synthetic organics, chemical capacity by 1960 will stand at an index figure of 217.

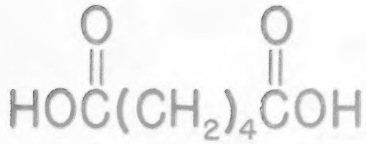


Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	182.0	181.6	175.0
Chemical Week wholesale price index (1947=100)	110.1	110.1	105.3
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	—	—	—

MONTHLY Production (Index 1947-49=100)	Latest Month	Preceding Month	Year Ago
All manufacturing and mining	143	144	141
All chemical products	182	184	176
Industrial chemicals	206	206	200

- Light Color
- Uniformity
- 99.8% Purity
- Basic Production
- Ample Availability



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E-11

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Lockbox regional banking is winning more chemical company users, because . . .

Lockboxes Add More Zip to Collections

LOCKBOXES—a method of handling customer payments that can add the equivalent of 2 or 3 days' average daily receipts to a company's working capital—are catching on fast in the chemical industry. That's because a general slowdown in bill collection, changes in income tax payment schedules, tight money, a need for liberal credit terms and expansion have upped the need of chemical firms for extra working funds. Still other firms are swinging over to ease customer relations by eliminating a second billing after the first has been paid.

Whatever a company's reason, the system is now in fairly broad use at Union Carbide, Stauffer, Pfizer, National Gypsum, Hoffmann-La Roche, Squibb and Celanese. Commercial Solvents uses a box in New York.

Lockbox trial tests are now under way at Monsanto, Olin Mathieson and Parke, Davis.

And the method is getting serious consideration at such process companies as Dow, American Cyanamid, General Electric's Chemical Division and Colgate-Palmolive. Diamond Alkali will probably adopt lockboxes if it decides to centralize billing and collections.

Usually, lockbox systems are tailored precisely to a company's collection needs and procedures—hence, variation exists. But generally, the method works this way:

- Company makes arrangement with local banks to rent post office boxes (lockboxes) in cities near customer concentrations and clearing houses.
- Customers are requested to remit to the box.
- Local bank collects checks frequently (12-20 times a day), credits payments to accounts, routes checks for clearance, advises the company (phone, wire, photocopy, letter, etc.) that checks have been credited.

Payoff: Net effect of such a system is that collections are speeded up, payment money becomes more quickly available. Naturally, the gain varies with the size of the checks, transit time and the number of checks. A West Coast firm using an East Coast lockbox could gain 4-5 days on its Eastern accounts. For companies doing business on a national scale, gains of 2-3 days are commonly realized. That works out to $60-90,000 more working capital for a company with average daily receipts of $30,000, better than $1 million for companies receiving $500,000 daily.

Improved internal control of collections is another benefit. Since the bank furnishes daily accounts of

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Ethyl alcohol is a "problem" liquid when it comes to storage because close Federal tax supervision holds producers accountable for every gallon. A major producer who stores alcohol in General American's Carteret terminal doesn't have this problem—General American assumes it for him.

In addition to storage, the terminal provides a variety of services—metering, blending, diluting, denaturing and packaging—all provided with the necessary accountability and accuracy that solves a difficult marketing problem.

If you have a storage problem involving hard-to-handle liquids, call on General American. Leased terminal facilities give you the privacy, safety, flexibility and service of your own terminal—*without capital investment on your part.* Phone or write today. You'll find . . . *it pays to plan with General American.*

Six terminals at five key-market locations with over 14,000,000 barrels capacity: PORT OF NEW YORK (Carteret, N. J.), PORT OF NEW ORLEANS (Good Hope, La.), CHICAGO, ILLINOIS (Bedford Park), PORT OF HOUSTON (Galena Park and Pasadena, Texas), CORPUS CHRISTI, TEXAS.

TANK STORAGE TERMINALS GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TANK STORAGE TERMINALS
a division of GENERAL AMERICAN TRANSPORTATION CORPORATION
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checks processed, the company obtains an up-to-the-minute picture of its cash situation,

Other advantages are difficult to assess. Take clerical savings, for instance. Under the lockbox systems, banks handle some clerical functions ordinarily performed by the company. Some firms tell *CW* that lockbox arrangements permit some credit personnel to be transferred to more productive duties. Others, however, have found such benefits more theoretical than real, and extremely insignificant.

Customers also benefit from remittance banking. It spares customers the embarrassment of rigid credit inquiries or a second billing arising from late receipt of payment. And the gain in working capital improves the suppliers' ability to extend credit when the situation warrants.

Not for All: Most concerns employing regional banking are fairly large—more than $100 million annual sales. Bankers estimate that the method is feasible only for firms (operating nationally) with yearly sales of more than $25 million and with an average check value of at least $1,000. Cost is the reason.

Banks insist on minimum balances or a per-check charge for the service. As a rough approximation, minimum balance requirements are from $100,000 to $300,000; check charges from 10 to 15¢. Generally, a compensating balance of $50,000 is needed per 1,000 checks processed.

The specific costs for a given company may, of course, vary widely. The number of checks handled, the special services desired, and even the prestige of the company enter into the figuring.

The extent to which a firm's billing and collection system is centralized also is a factor. Companies using decentralized systems usually have much less to gain than those operating centrally.

But exceptions to the "only for big companies" rule of thumb do exist. If a smaller firm has a very large average value per check, if its accounts are strongly geographically concentrated or if the number of checks is small, it might be able to make arrangements.

Banks, anxious to bolster lending

DISCOVERED!

many new uses for

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Ever-increasing uses of Jacques Wolf & Co. sulphonated fatty oils have made them more popular than ever before! These applications are being discovered daily by manufacturers in such diversified fields as textiles, paper, leather, polishes, printing inks, oil well drilling, and adhesives —who now accept them as true "jacks-of-all-trades." Advanced methods of sulphonation have made them better than ever . . . their new uses have made them more valuable than ever. Check their amazing versatility soon! You, too, will be surprised!

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JACQUES WOLF & CO. Chemicals PASSAIC, N.J.

Plants in: Clifton, N.J., Carlstadt, N.J., Los Angeles, Calif.

Finding Facts for Fiber Sales

Chock full of textile mill equipment, Allied Chemical's new fiber application laboratory will play a key role in building sales of Caprolam polyamide fiber for the firm's National Aniline Division. The lab's machinery includes looms, warpers, spinning and tufting apparatus for evaluating new designs and applications. A quality-control department will check standard materials. The new lab adjoins Allied's Caprolam fiber manufacturing plant located at Chesterfield, Va.

INVESTIGATING?

INVESTIGATING? It pays to see Victor

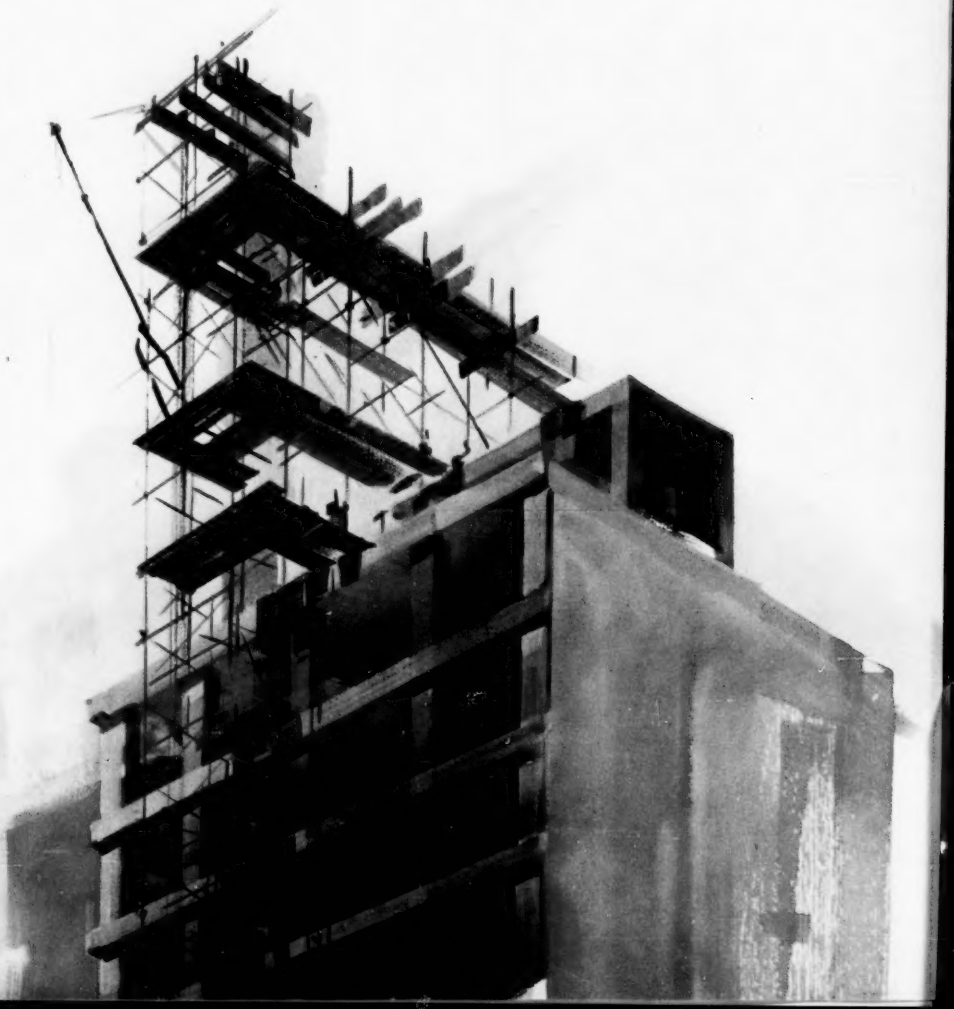
Another new building zooms skyward—more modern, better looking, safer to work in, easier to maintain—thanks in many ways to Victor chemicals.

From "ground breaking" to "open house"—and beyond—Victor phosphates, formates, and oxalates play a vital part. Metal fixtures and furnishings, for example, look brighter . . . boilers stay scale-free longer . . . leather furniture is more luxurious . . . vitreous finishes adhere better and have more luster. In short, from basement to TV tower top—Victor chemicals are part and parcel of today's most modern building materials, equipment, and furnishings.

More than 40 industries rely on Victor for chemicals to cut costs and improve products. Investigate Victor chemicals . . . It *pays*!

Burning the candle at both ends? One kind of burning you can do something about is—fire. *Victor diammonium phosphates* combined with certain resins provide flameproof coatings for building materials. Paper and textiles, too, become fire resistant when sprayed or immersed in a solution of *ammonium phosphates* or *Victor Fyrex®*. Paints can be made flame resistant with the addition of a Victor phosphate. Investigating flameproofing? It pays to see Victor.

Fuel for the inner man. Today food has to "do good" as well as taste good. *Victor iron* and *calcium phosphates* supply mineral enrichment that keeps people healthy and on the job. And at morning and afternoon "break" time, many soft drinks contain *Victor phosphoric acid* as part of their pick-me-up formula. Investigating mineralization or acidulation? See Victor. It pays.

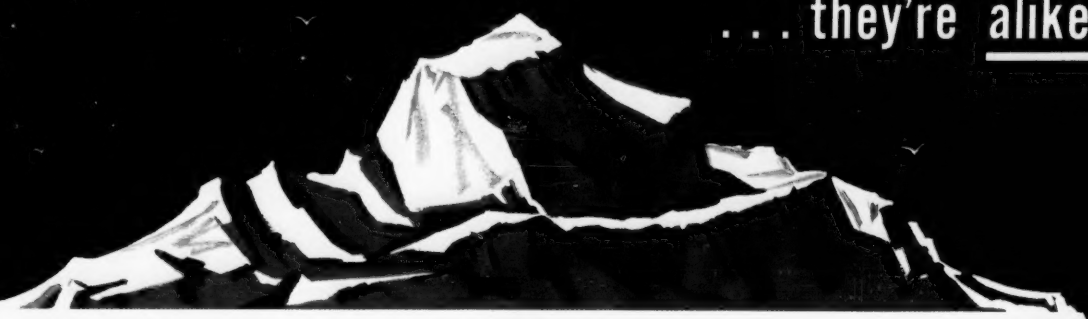


Short and "sweet." When the KP shift takes over today, dishwashing is a snap. Commercial dishwashing compounds containing *Victor chlorinated trisodium phosphate*—smell fresh . . . do a cleaner and a more antiseptic job. Heavy-duty detergent manufacturers, too, know it pays to see Victor for *sodium tripolyphosphate* and *tetrasodium pyrophosphate*. Both provide outstanding water-softening and detergent properties.

icebergs

and organophosphorus derivatives

. . . they're alike?



You know that the biggest part of any iceberg is under water, regardless of visible size. And regardless of the number of organophosphorus families you see here (and there is no list longer than Victor's), the number of *related compounds* you *can't* see is—far, far larger.

Victor can prepare almost any organophosphorus compound you ask for. Our versatile organophosphorus productive capacity is literally at your beck and call. So, too, is our technical staff—where confidential solutions to product and process problems are as much a part of Victor Chemical as—the chemicals themselves.

Send for data sheets on Victor's organophosphorus derivatives listed in the coupon below.

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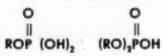


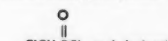
Phenylphosphonic Compounds

Phenylphosphonous Compounds

$C_6H_5PCl_2$ and derivatives

Phenylphosphonothionic Compounds

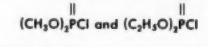
Chloromethylphosphonic Compounds



Dialkyl Phosphites

Dialkyl Phosphorochloridates (Dialkyl Chlorophosphates)

Dialkyl Phosphorochloridothionates* (Dialkyl Thionochlorophosphates)



Surfactants

Vinyl Light Stabilizers

*U.S. Patent 2,715,136

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- ☐ Phenylphosphonic Compounds
- ☐ Phenylphosphonous Compounds
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- ☐ Chloromethylphosphonic Compounds
- ☐ Dialkyl Phosphites
- ☐ Dialkyl Phosphorochloridates (Dialkyl Chlorophosphates)
- ☐ Dialkyl Phosphorochloridothionates (Dialkyl Thionochlorophosphates)
- ☐ Surfactants
- ☐ Vinyl Light Stabilizers

Name.....Title.....

Company.....

Address.....

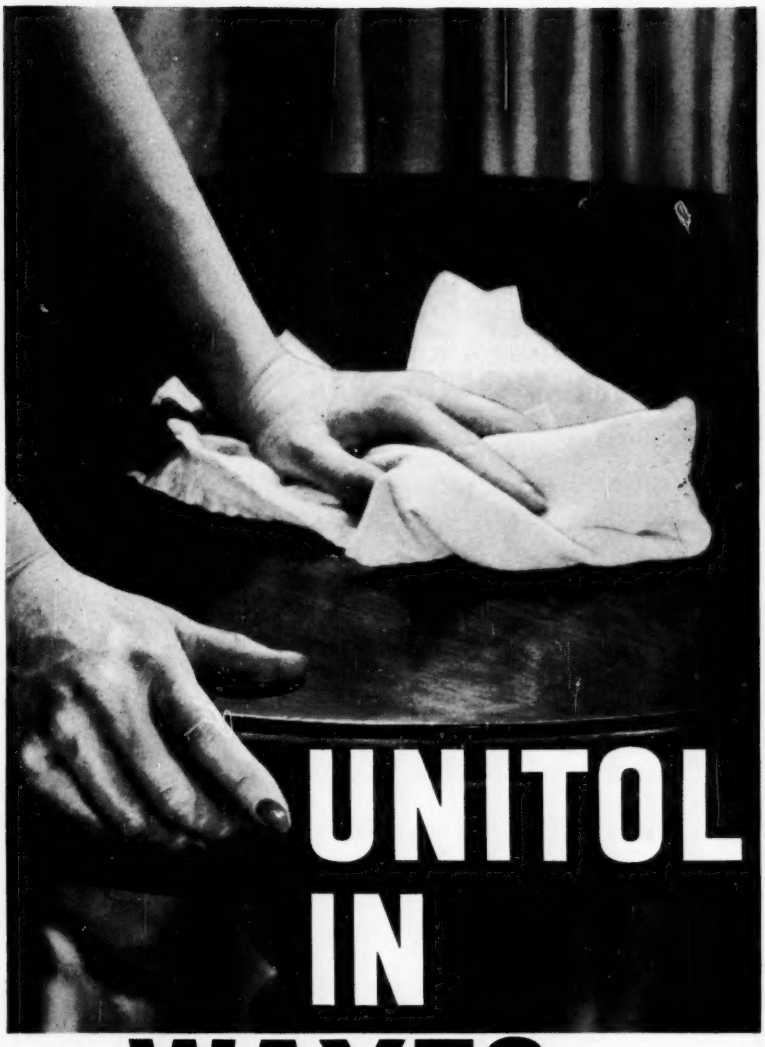
City.....Zone.....State.....

power, are beating the bushes for new accounts, offering lockbox service as a lure. Some are willing to establish remittance banking for less-than-normal requirements. And, there's growing interest in standardizing lockbox arrangements, using machine handling. That could reduce check-handling cost, make the method more attractive to small companies.

Start-up Snafu: Chemical credit men find few flaws in lockbox arrangements; they say that drawbacks are usually transitory, occur at the initiation of the system.

- Customer education: Initially, some customers mail their orders and other requests to the post office box. Result: shipments may be delayed.
- Personnel problems: Clerical savings stemming from lockbox systems could cause rearrangements in duties of credit staffers, transfers to other company departments, resultant morale problems.
- Bank relations: Lockbox funds enhance a bank's lending power. Banks that lose out in the competitive race for an account's balances may be reluctant to offer attractive terms when that company shops for a loan.
- Customers relations: Occasionally, customers complain that lockboxes remove funds from their accounts faster. This criticism is generally discounted on the basis that only very small, marginal accounts make use of the time lag between check writing and cashing to bolster working capital; that such a benefit to the customer is rather small; that many companies charge off the check at the time of writing; and that the larger firms pay promptly anyway. Most companies report little difficulty in customer relations.
- Procedural trouble: Changes in check-handling and billing arrangements and divisional differences often raise procedural problems. Studies over a period of a year or more may be necessary before lockboxes can be adopted.
- Blanket processing: Infrequently, there are problems of handling technically imperfect checks, crediting of payments destined for another company's account, or processing of checks that might be contestable by the company.

Such difficulties are minor, however, and credit men wax enthusiastic about the benefits of lockboxes.



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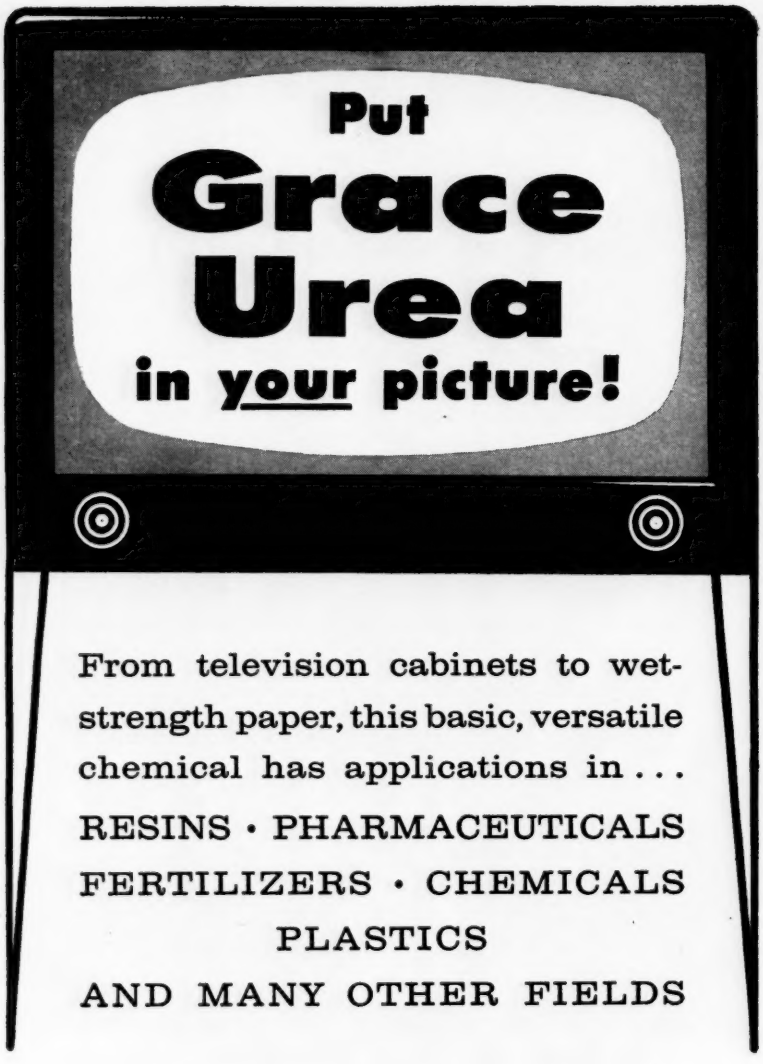

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SALES

There is, however, the limitation the boxes have as a means of solving a collection slowdown. While the method does pare the average collection period, the fundamental causes remain. Once the system's 2- to 3-day collection gain is realized, no more slack remains to be taken up if further payment lags occur. Still, the 2- to 3-day gain is worth going after, and more firms can be expected to adopt lockbox systems.

DATA DIGEST

- **Adhesives:** Chart tabulates properties of epoxy adhesives used in electrical, building construction, tooling and other industries. Furane Plastics Inc. (Los Angeles).
- **Drug catalog:** Metric and avoirdupois weights are given equal prominence in the new edition of a catalog that lists alkaloid, barbiturates, sulfa, anesthetic and other drug types. Gane and Ingram, Inc. (New York).
- **Catalog:** Describes properties and applications of boron chemicals, soda products, potassium compounds, bromine, refrigerants, electrochemicals and other materials. American Potash & Chemical Corp. (Los Angeles).
- **Paint polymers:** 7-p. bulletin gives formulas for hopper car, marine and other spray coatings based on liquid polymers. Thiokol Chemical Corp. (Trenton, N.J.).
- **Vermiculite:** New folder suggests use as carrier agent for granular insecticides, herbicides and fungicides. Handling and formulating hints are included. Vermiculite Institute (Chicago).
- **Commercial glasses:** Comprehensive 16-p. brochure covers mechanical and electrical properties, thermal stress, heat transmission, corrosion resistance, viscosity data and other topics, also contains data on newer types—aluminosilicate, iron sealing, fused silica, radiotron and capacitor glasses. Corning Glass Works (Corning, N.Y.).
- **Corrosion inhibitors:** 21-p. illustrated brochure describes in detail use of polar cationic chemicals in primary and secondary oil production. Special emphasis is given to relation of corrosion and microorganisms and chain reaction caused by sulfate reducers. Armour & Co., Chemical Division (Chicago).

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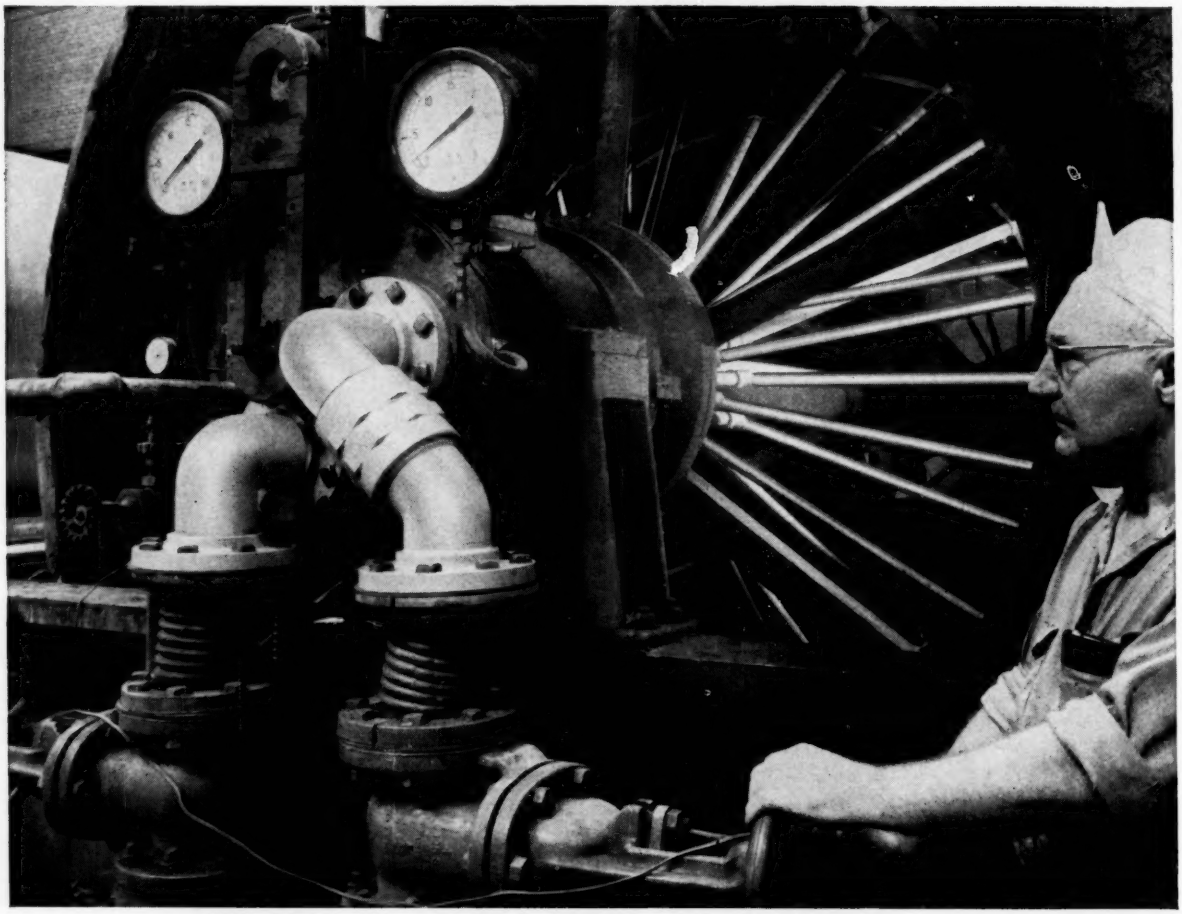
USCOLITE PLASTIC PIPE



Pipeline of one of the Seven Wonders of American Engineering

Chicago's 403-million-dollar sewage disposal system every day processes 1200 million gallons of raw sewage. It's regarded by authorities as one of the seven engineering wonders of the nation.

Imagine the damaging effect on pipe of ferric chloride and other acidic chemicals used in the process! But this is not ordinary pipe in Chicago's great sewage disposal system. It is *Uscolite® Plastic Pipe.*

Uscolite Plastic Pipe was installed some eight years ago. Since then not a single leak has developed, not even a sign of weakness. The metal pipe it replaced had in some places been reduced to the thickness of a thumbnail!

The above rotary filter is but one of ninety-eight in the system. Each filter is 16 feet long, 11½ feet in diameter, contains 820 feet of 1" Uscolite Plastic Pipe and hundreds of Uscolite nozzles and additional fittings.

Uscolite Pipe and fittings are obtainable at our 28 District Sales Offices—each staffed with factory-trained engineers, at selected distributors, or write us at Rockefeller Center, New York 20, N.Y. In Canada, Dominion Rubber Co., Ltd.

NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL AWARDED TO USCOLITE PIPE

Mechanical Goods Division

United States Rubber

Technology
Newsletter

CHEMICAL WEEK
July 13, 1957

Watch for word on these developments from Tennessee Eastman:

• A decision on the firm's acetylene-from-natural-gas plans. It has been piloting the Haschke process for some time, may reach a decision soon either to use it or to license it to others. Manufacture of acetylene, of course, would be a logical preliminary to manufacture of acrylonitrile for its Verel acrylic fiber. The Hasche process, a version of the Wulff acetylene process, cracks natural gas by use of regenerative furnaces. Tennessee Eastman has been studying the Hasche method for years (*CW Report, April 28, '51*). In Germany, Ruhrchemie has looked at a variation of it.

• A new polyester fiber. The firm has been researching this field for a long time, too, has evidenced interest in the terephthalates.

• A new cellulose-acetate-propionate resin.

• A new synthetic lubricant. Now under test by the Air Force, it has shown promise of supplanting some existing materials.

•

The East Germans have developed a brown coal coking process. They're operating a plant now that treats 750,000 tons of coal a year. By 1959 or 1960, they hope to be treating 75,000 tons/day.

Being short of coal, of course, they're being forced into such development. But even so, the process, if it proves workable, would be quite a trick. Presumably, the brown coal is briquetted before coking.

•

A foamed aluminum material that may replace wood in construction applications is being developed by Bjorksten Laboratories (Madison, Wis.). The material, just slightly heavier than balsa wood (15 lbs./cu. ft. vs. 12 lbs./cu. ft.), can be sawed, nailed, screwed, cemented or bolted. It can be made even lighter (10 lbs./cu. ft.).

President Johan Bjorksten says that the product could potentially be made as cheaply as lumber. He feels that eventually it might be used instead of lumber in most applications (e.g., houses) because of its resistance to corrosion and to fire.

He freely admits, however, that the development is still in an early stage and there are lots of wrinkles to be ironed out.

•

A radiation shield of paraffin and lead has been placed in "commercial" production by California Ink Co. (Berkeley, Calif.). Developed by William McMaster of the University of California's radiation laboratories, the shield is said to be considerably cheaper than solid lead. It's made of granulated lead in a paraffin wax base, can be molded into any

Technology Newsletter

(Continued)

desired size or shape. The University of California laboratory is using bricks of it to line a container.

•

High energy fuels will be a billion dollar business within ten years. That's what Olin Mathieson says this week. It also is revealing some highly significant facts concerning its own high energy fuels operations in the Niagara Falls area.

• On the scope of production. There are three plants involved. One, a semicommercial one costing $5.5 million, is in operation now. Shipments have already been made to the Air Force. A second interim plant, three times as big as the present semicommercial one, is scheduled for completion by the end of this year. The third unit—the big, $36-million plant—is due to start up within 20 months. This will be just 4.6 times as big as the interim plant.

• On the makeup of the fuels. It describes them in a general way as consisting of carbon, boron and hydrogen. It refers to two fuels, HEF-2 and HEF-3, implies that HEF-3 is the preferred one. It says that it is ready to make HEF-4, the successor to HEF-3, if needed. And it adds that it is well along with research on the successors to HEF-4.

• On the price of the fuels. It says that "our developments have brought the price down rapidly . . . large-scale production prices would be moderate and within the range to permit extensive use of the fuel." It bases its billion-dollar/year business statement on a price for the fuel of $1/gal. (which it calls very conservative) and the assumption that the fuel would be consumed at the rate that JP jet fuel was used last year.

Research efforts on solid rocket propellents are being stepped up by Olin Mathieson and Indiana Standard Oil. OM last week said it has begun a major expansion of facilities for developing high energy solid propellents at its Ordill Works, near Marion, Ill. This will be the firm's first big effort in solid propellents.

Indiana, which has been researching solid propellents since 1951, is building additional lab facilities for the Air Force at Freeman Field, Seymour, Ind. They're due to be completed this fall.

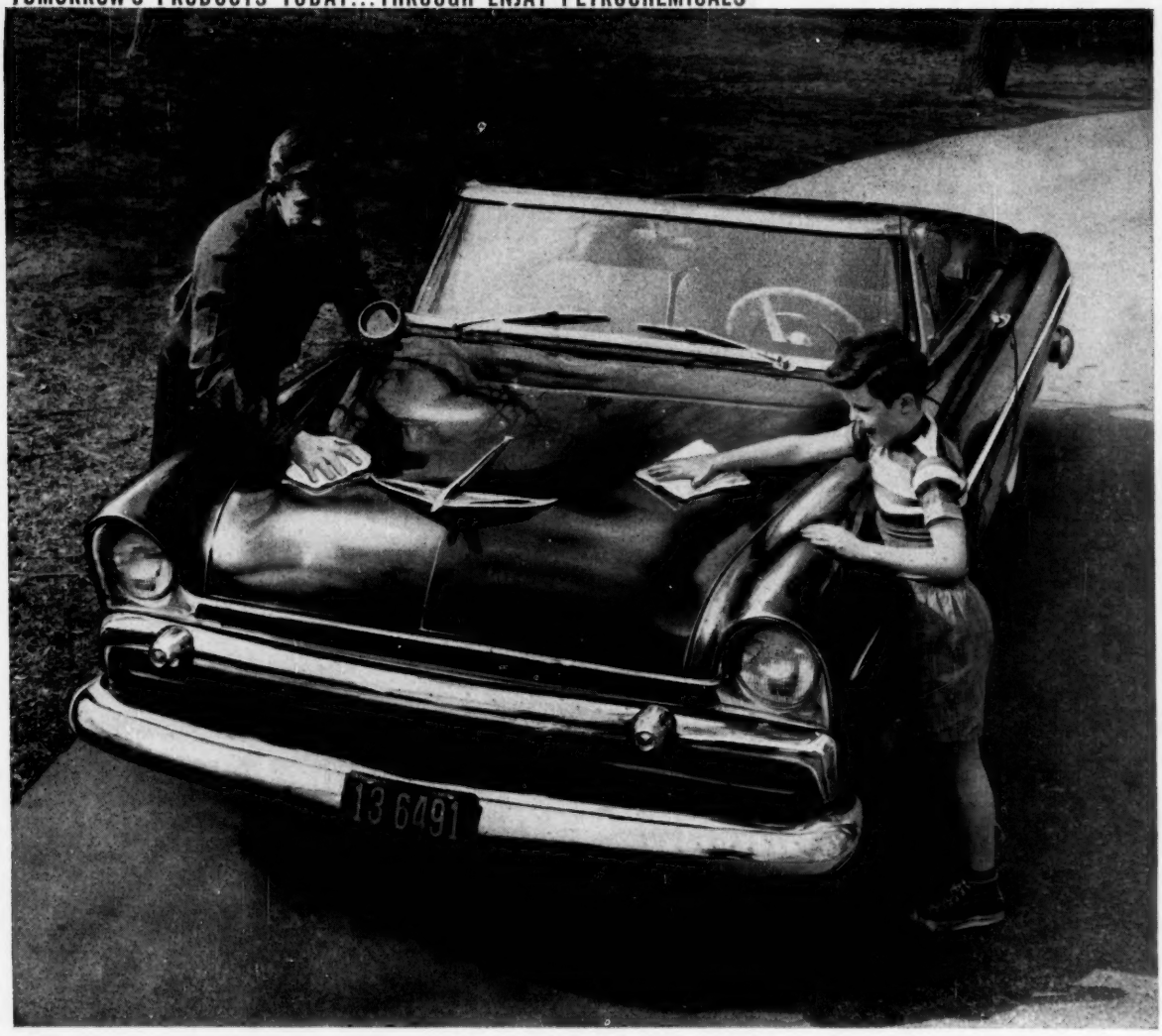
•

Nuclear reactor cores of polyethylene and uranium are being irradiated to give them improved heat resistance. Aerojet General Nucleonics is sending fabricated cores to Applied Radiation Corp. (Walnut Creek, Calif.). There, they're treated to an 8-million-electron-volt jolt by a linear accelerator. The cores contain 20% enriched uranium oxide.

•

Medicinals to preserve steel? Three Japanese scientists have found that small amounts of salvarsan (0.4%) or penicillin (0.03%) prevent bacterial corrosion of steel. Their work is mentioned in the German publication *Naturwissenschaften* (Vol. 44, '57).

TOMORROW'S PRODUCTS TODAY...THROUGH ENJAY PETROCHEMICALS



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Good looking cars look even better with high-gloss lacquer finishes. Enjay solvents make superior lacquers because of their high purity, uniform boiling range, and carefully controlled evaporation rates.

Enjay petrochemicals are widely used by manufacturers in the formulation of many other surface coating products: vinyl lacquers and water-base paints; lacquer, enamel, paint and varnish removers.

The recently expanded Enjay Laboratories are fully equipped to handle surface coating problems related to the application or use of any Enjay petrochemical. Write or call for more information.

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Enjay offers a widely diversified line of petrochemicals for industry:

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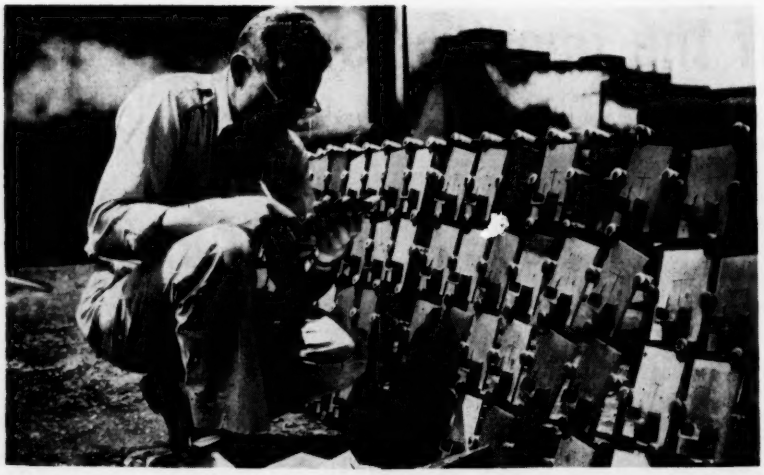
Monsanto's Martinson (right) and outside consultant Tator confer on solution of paint problem.

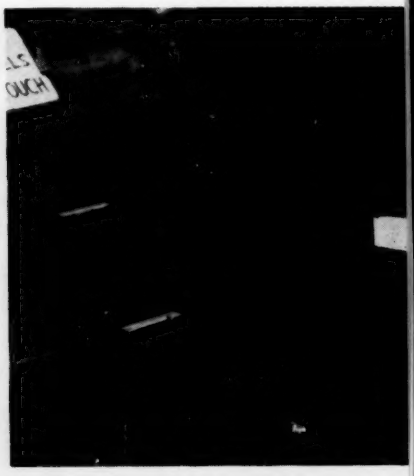
Painting a Profitable Maintenance Picture

Many firms prefer to have their corrosion engineers or specialists in materials of construction handle paint studies as part of their regular duties. But setting up a special group for paint and other protective coatings is getting to be an increasingly popular gambit. Carl Martinson, pictured on these pages, heads such a group at Monsanto. Last week, after a year in this capacity, paint specialist Martinson gave some trenchant counsel on how to set up a protective coatings program, what sort of results can be expected from it.

Dow, Du Pont and a few others have had men in similar positions for some time. Impetus for establishing the job at Monsanto was provided by Frank L. Whitney, Jr., manager of the Research and Engineering Division's corrosion section. Whitney felt that the creation of the post of paint consultant was a natural function of



Paint test panels are exposed to critical atmospheres in plants.



Panels for studying roofing materi

the section and an important step forward in the company's cost-reduction program.

Moreover, nine project committees for setting standards throughout Monsanto plants for items such as pumps and electrical equipment had already been set up. Martinson not only studies paint and other protective coatings, but also serves as the chairman of a new committee for setting standards to govern all phases of protective coatings use.

Down to Cases: Martinson counts the selection of the eight-man Protective Coatings Project Committee and its first meeting—a three-day affair in the middle of May—as the most important accomplishment of his year-old program. The way he puts it: "Now that the committee is functioning, we can start to realize results from the year's spade work, and arrive at sharp, meaningful, to-the-point standards."

The decisions of the group will mean something because the members have the authority to speak for the divisions they represent. In addition to Martinson the committee includes members of the four manufacturing divisions, research and engineering, purchasing, personnel relations (safety and fire protection).

Paint Comes First: The subject of painting took up the entire first meeting because work in this field is farthest advanced. But the subject of other protective coatings will not be overlooked at the three meetings of the year. Martinson stresses the committee's name—"Protective Coatings," rather than "Paint"—to underscore the broad scope of the field. Monsanto has set no restrictions on the group's activities, expected to include roof coatings, adhesives, insulating materials, tank linings, metallizing.

The pattern for attacking these other subjects will undoubtedly follow the one established for paint, which includes a test program, complete cataloging of paint performance, a standards manual and a preventive maintenance program.

KTA System: More than 20 paint test stations have been set up by Martinson at strategic locations in seven plants from Massachusetts to Texas. These stations will gather data according to the KTA method worked out by Kenneth Tator (Kenneth Tator Associates, Corapolis, Pa.).

Tator, who has been in the paint consulting field* for about eight years, has been retained by Monsanto to help establish the program. Tator will serve as a guide for about 18 months, then pull out, once the firm has its program well under way.

Panels by the Dozen: Here's how testing of coatings is conducted:

Small steel panels are painted with test product, mounted in racks of 24 and exposed to the selected plant environment. Rectangular in shape, the panels have a small U-shaped projection, combine all of the common surface shapes—flat, sharp-edged, round-edged, corners, etc.—encountered in painting.

The panels are inspected and graded periodically to determine the deterioration rate. The results—cataloged in a keysort file—not only enable determination of performance characteristics, but also a cost projection in terms of cents/sq. ft./year for any given coating system.

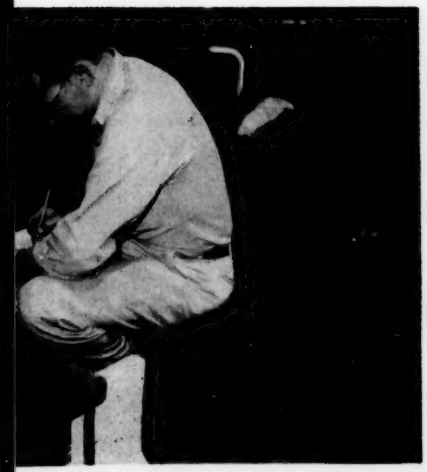
The evaluation procedure sets up a numerical scale for grading the rate at which the paint breaks down—a rating of 0 indicates total failure, a rating of 10 indicates perfect results. From previous experiments, the KTA method has helped isolate and quantitatively define the action of about 10 types of environments or "basic exposures" to which 80-90% of the cases of paint failure in new test locations may be related. Material selections are made accordingly.

In addition, Martinson has set up small-scale panel tests in advance of yearly plant painting schedules in those critical areas where paint performance has not yet been studied.

Roofing, Too: The KTA method has already been adapted for testing of roofing materials. A KTA test panel, called a "Hollywood bed," which it resembles in profile, replaces costly, tedious roof-patch testing.

But basic paint studies are far from complete. Yearly paint schedules as

*For results of his work with Pennsalt, cf. *CW*, May 31, '52, p. 39.



are called 'Hollywood beds.'

Protective-coatings committee views findings, sets standards.

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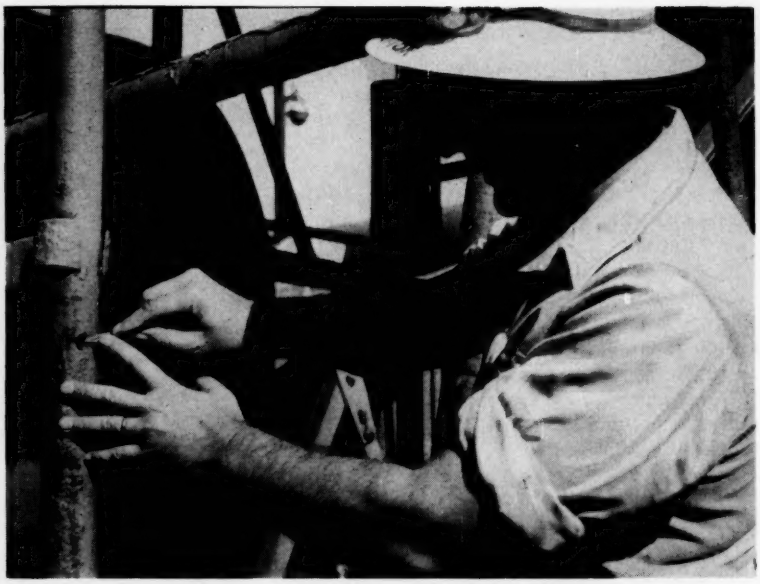


Frequent plant visitor, Martinson, seeks 'why' of paint failure.

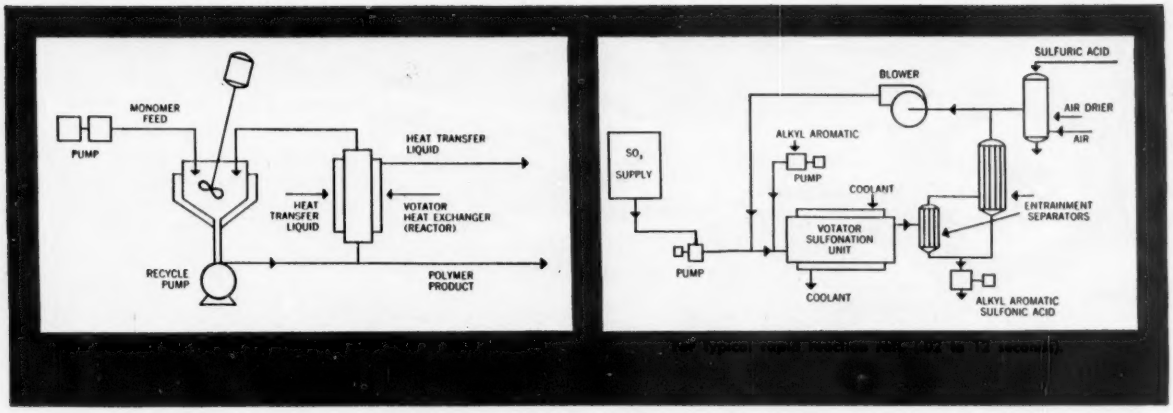
a part of preventive maintenance are common practice in some plants, must be instituted in the remaining plants. Says Martinson: "This is the area in which we expect to realize the greatest monetary savings for the company."

In this regard, he adds, "We have adopted the philosophy of attempting to preserve the gains we have already made rather than attempt to bite off more than we can chew by doing a lot of new painting."

Much of the material that has been compiled on paint is included in a paint manual that has been issued to Monsanto plants. Although Tator performs this service, too, in Monsanto's case, "the manual was largely Martinson's work," says Tator.

The manual includes sections on

Martinson's chief, Watkins (left), checks progress of the program.



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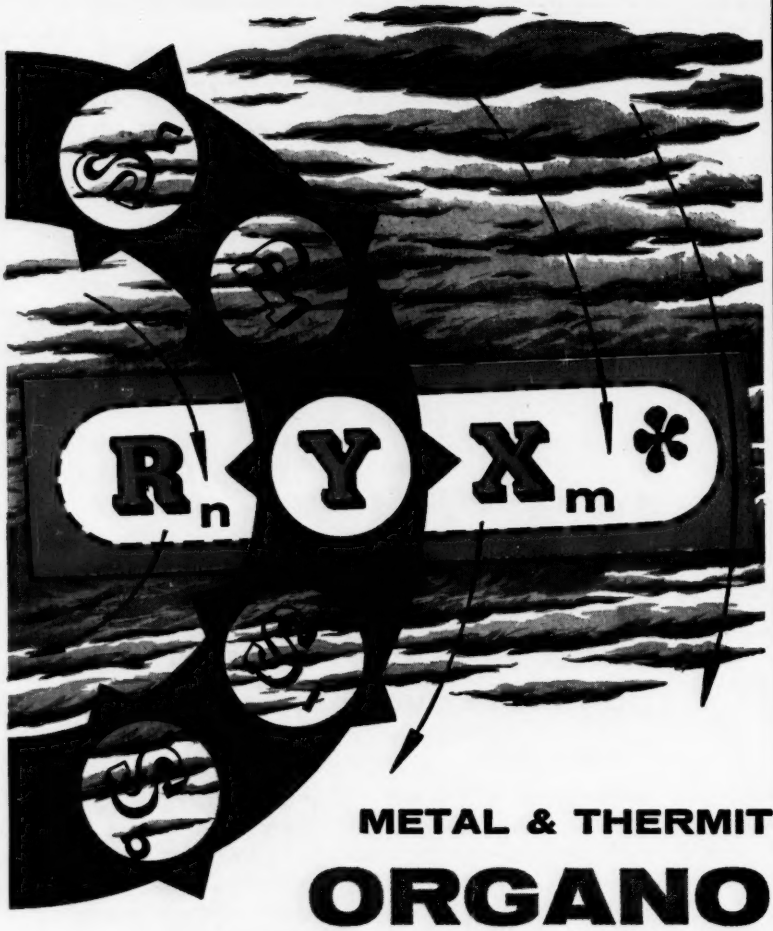

METAL & THERMIT

ORGANO METALLICS

*R_nYX_m—In this formula R may be alkyl or aryl; Y represents the metallic element, and X an electronegative group such as halogen, oxygen in substituted groups of the alkoxide, acid radical or hydroxide type, or electronegative sulfur-containing groups. n+m must equal valence of Y.

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PRODUCTION

paintings schedules, selection of paint systems, surface preparation, color standards, application of paint, inspection and maintenance, measurement of painting rates, specifications, evaluation procedure, design and safety.

But Martinson stresses that it is only a beginning. The manual will have to be revised and strengthened—and a good part of this job will fall to the Protective Coatings Project Committee.

EQUIPMENT

Hydrostatic Tester: Farris Engineering Corp. (Palisades Park, N.J.) has developed a 55-lb. version of its Porta-Tester for on-the-spot hydrostatic testing of valves, pressure vessels, piping, pump cases and other process equipment. The unit is capable of measuring pressures up to 3,000 psi., comes with four test gauges, 8 ft. of hydraulic flexible tubing and carrying case. The tester's pump handle folds flat for storage in the case.

•

Vacuum Control: Manostat Corp. (New York) has added the Cartesian Manostat #6A to its line for automatic vacuum-pressure control. Designed as an integral part of the instrument, the toggle valve is said to assure absolute tightness of the set pressure, allow the system to be shut down without disturbing the setting.

•

Small Filters: The redesigned line of R.P. Adams Co., Inc.'s (Buffalo, N.Y.) small filters is said to provide a 75% increase in filter area without increase in floor space requirements. The WJR-1-A filter now has 3.5 sq.ft. of filter area, is available in carbon and stainless steel with Poro-Stone, Poro-Carbon and Poro-Screen elements. Design pressure: 100 psig.

•

Spray Nozzles: New additions have been made in the large-capacity range to Spray Engineering Co.'s (Somerville, Mass.) line of wide-angle, full-cone, center-jet spray nozzles. Spray angle: 120 to 140 degrees. Standard nozzles are made of brass, cast iron, carbon and stainless steel. Special nozzles of any machinable material can be made up on request. Multivane centers assure uniform distribution, maximum atomization.

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3. Leather Oils	Emulsifying Agent for Leather Processing Oils	Wetting and Dispersing Agent for Leathers
DISPERSION AND WETTING OF SOLIDS		
4. Rubber Manufacture	Thermo Plasticizing Agent	Increases Dispersibility of Filler
5. Fuel Oil	Keeps Sludge in Suspension	Prevents Segregation of Moisture
6. Printing Ink Manufacture	Aids dispersion of pigment	Reduces Viscosity of Ink
7. Ore Flotation	Flotation Reagent	Selective Wetting Agent
8. Additives for Lube Oil	Acts as Detergent	Inhibits Bearing Corrosion
WETTING AND DISPERSION OF LIQUID-SOLID SYSTEMS		
9. Crude Oil Emulsion Splitting	Reverting Agent for Water-in-Oil Emulsions	Aids in Wetting out Salts and Solids
10. Emulsifiable Solvent Cleaners	Dispersing Agent for Oil and Grease Deposits	Acts as Emulsifying Agent
11. Dry Cleaning Compounds	Linking agent for Water and Solvent	Loosens Dirt Absorbed by Fabric
12. Fat Splitting Process	Dispersing Agent for Solid Fats	Acts as Wetting Agent
INHIBITION OF RUST AND CORROSION		
13. Corrosion Preventive Compounds	Rust and Corrosion Inhibiting Agent	Acts as Moisture Barrier
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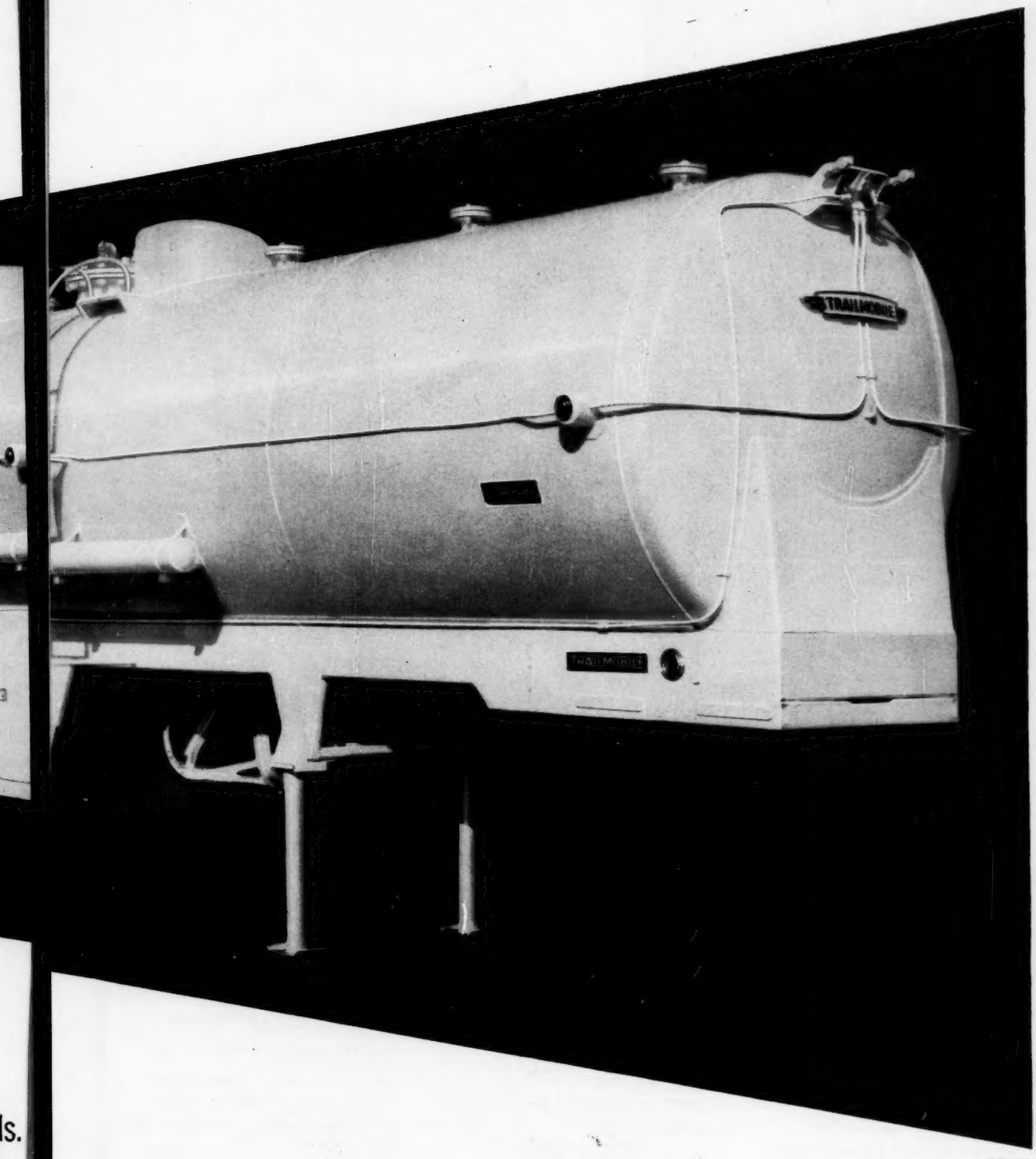

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Five Factors for a Future Potash Squeeze?

ON THE SURFACE, the outlook for U.S. potash producers is gloomy. Demand for fertilizer potash is slacking off, prices are slipping, competition is becoming decidedly rougher. And during the next few years, there will be problems of overcapacity, and increasing imports—the probable result of a likely shift of major potash production from New Mexico to Canada.

The situation actually is not as bad as it seems. But, no realistic potash producer can hope to ride through the rest of this decade on the coattails of an "expanding national economy." Ahead are sell-harder periods and, probably, necessary readjustments in business practices to fit the changing pattern of North American potash markets.

On these pages are the underlying factors that will influence the actions of potash producers during the next few years.

More U.S. Capacity: A dearth of capacity data has long prevented an accurate analysis of the nation's potash production potential. Most producers either flatly refuse to disclose their own capacity figures or couch them in terms not easily comparable with reports

Estimated 1957 U.S. Potash Capacity

(tons/year—as K_2O)

These Producers	Located At	Can Turn Out
American Potash & Chemical	Trona, Calif.	225,000
Bonneville, Ltd.	Wendover, Utah	50,000
Duval Sulphur & Potash	Carlsbad, N. M.	240,000
International Minerals & Chemical	"	375,000
National Potash	"	240,000
Potash Company of America	"	550,000
Southwest Potash	"	250,000
U. S. Potash	"	540,000
Others		10,000
	Total	2,480,000 tons/year

of others—i.e., as "finished product," "muriate and other products," etc.

CW here provides a more realistic breakdown (in terms of K_2O content), based on a consensus of estimates by industry experts:

American Potash & Chemical, though reluctant to discuss its actual annual potash production, or state the capacity of its Trona, Calif., brine-extraction operations, does note that APC's share of total '56 potash deliveries in the U.S. (2,307,961 short tons of K_2O) was roughly 7%—or about 160,000 tons.

This disclosure indicates that the firm has expanded potash capacity beyond the 150,000 tons/year reported in '54. Company spokesmen tacitly confirm some expansion by saying that "recent increases in capacity have been through technological improvements."

Although APC reportedly has planned two 50% capacity boosts in the last 16 months, most market observers doubt that the company's total potash capacity now exceeds 225,000 tons year of K_2O.

Current potash capacity of International Minerals & Chemical at Carlsbad, N.M., the firm reports, is "800,000 tons/year of all potassium salts, including usual muriate which is 60% K_2O." (Other market researchers peg IMC potash capacity at some 375,000 tons/year of K_2O.)

The new $17.5-million potash plant completed a few months ago (*CW, March 9, p. 112*) by National Potash (jointly owned by Freeport Sulphur and Pittsburgh Consolidation Coal) will, when operating at full capacity, produce "400,000 tons/year of muriate of potash" (240,000 tons/year as K_2O).

Southwest Potash (Carlsbad) last year expanded facilities by some 30% at a cost of $2.5 million. This brings the firm's capacity up to approximately 250,000 tons/year of K_2O.

U.S. Potash (Carlsbad) also boosted capacity by 20% in '56, bringing K_2O capacity to an estimated 540,000 tons a year.

Other major U.S. potash producers have reported no significant capacity increases during the past two years.

Eight major producers account for about 99.5% of all U.S. potash production; several other firms, each with a small annual turnout, together make up the remaining 10,000 tons/year of total U.S. output.

Dow Chemical, for one, makes some potash at Midland, Mich. Other producers—A. M. Blumer of Davenport, Calif., for example—aren't even listed among potash producers by most market researchers. Reason: the firm produces no more than 1,500 tons/year of potash—known as "agricultural mineral flue dust"—as a by-product of the manufacture of special cements.

A similar case is North American Cement Corp. (Security, Md.). This firm has been making small amounts of potash for some time, but only for local consumption.

Of great interest to potash marketers are the new producers, now developing mines and building mills, whose combined capacities will likely boost total U.S. potash capacity close to 3 million tons/year by 1959.

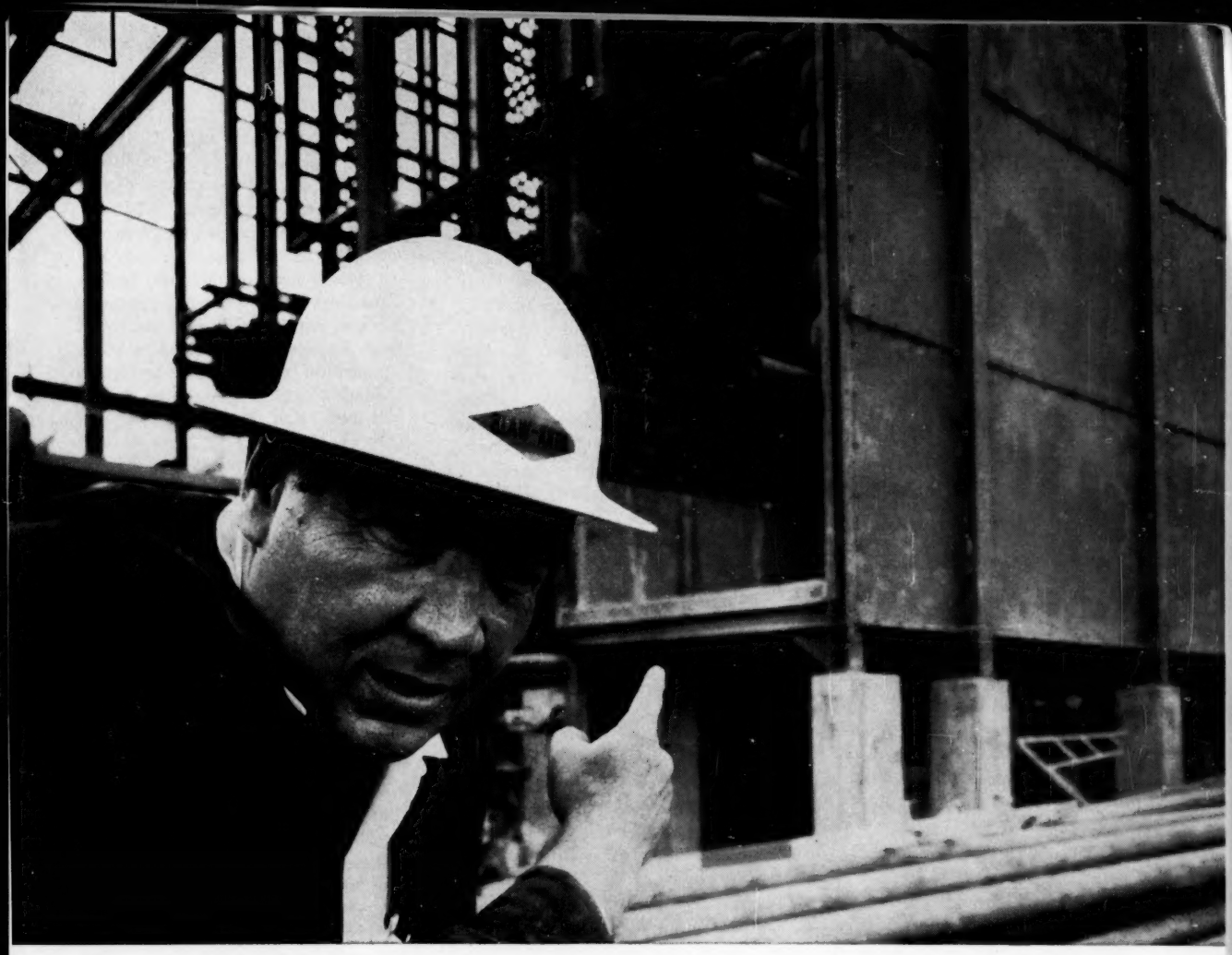
One such firm is Delhi-Taylor Oil Corp., which reportedly is building a $20-million potash mining and beneficiation plant at Moab, Utah. No capacity figures have been revealed, but the cost estimates for the project indicate that a plant of at least 250,000 tons/year capacity (as K_2O) is anticipated.

Farm Chemical Resources Development Corp. (jointly owned by National Farmers Union, Kerr-McGee Industries and Phillips Petroleum) should now be well along in drilling its first shaft on a 15,000-acre potash deposit at Carlsbad. The proposed plant (to be worth from $13-15 million) will produce "1,000 tons/day of potash and by-products." The K_2O equivalent could be estimated at 200,000 tons/year if figured on the basis of the plant cost, or considerably more than that if the usual conversion factor from "final product" to K_2O capacity is used.

Other projects have been reported; whether or not they will develop into producing ventures remains to be seen. Max Krotki (Marysvale, Utah), for example, has tried to develop potash production, but no product is being turned out at present, nor is it likely that this project will develop into one of any great significance in the near future. Port Wentworth Corp. (Savannah, Ga.) last year planned a $150,000 preliminary mining survey near Port Wentworth, but little is now heard about the project, and potash market followers are wont to dismiss it as "one of those on-again-off-again enterprises."

Continental Potash (Carlsbad; not to be confused with a firm of the same name in Canada) has tried to develop a potash mining process that's an adaptation of the Frasch sulfur process, but without apparent success. Continental has, in fact, turned over its Carlsbad properties—on a royalty basis—to National Potash.

Softening Market: How does the forthcoming 3 million tons/year of U.S. potash capacity compare with probable consumption during the next few years? The answer hinges on trends in agricultural uses, of course,



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because 95% of all U.S. potash consumption is for fertilizer.

In '56, potash deliveries in North America by seven leading producers and all importers amounted to almost 4 million tons of salts. Content: a little over 2.3 million tons of K_2O equivalent. This is an increase of 103,370 tons of K_2O (less than 5%) over '55.

Of the total deliveries last year, 1.87 million tons of K_2O went for agricultural uses in the continental U.S. This was a decrease of 5,885 tons from corresponding deliveries in '55.

(Potash exports—about double the '55 volume—accounted for the relatively small increase of total potash shipments. Imports, incidentally, remained at about 200,000 tons—the same as in '55.)

That the fertilizer market is in the doldrums was emphasized a few weeks ago at the National Plant Food Institute meeting, White Sulphur Springs, W.Va. Members approved a resolution calling for doubling of the membership's financial support of the fertilizer market expansion program and promotional activities.

The approval was carried in the face of strenuous objections—and threats of resignation from the organization—by members representing all but one major U.S. potash producer.*

Approval of the resolution under these circumstances was a tacit admission that the fertilizer industry is in need of hard-sell techniques. But this general understanding did not forestall cheery forecasts, by some speakers, that fertilizer consumption would make steady gains in '57.

Optimists pointed to the "relative prosperity of the farmer" (despite reduction of their purchasing power during the past few years) and expressed faith in good results to be gained from a vigorous fertilizer sales campaign. How easily the nation's farmers—who were labeled "reluctant customers" by one speaker—can be induced to part with more dollars for fertilizers remains to be seen.

While the mood was cheery at the meeting, behind-the-scenes comments about potash sales are less rosy. The consensus of potash industry experts is that growth of consumption will taper off to much smaller annual increases during the next few years. In the face of expected capacity increases, this likelihood indicates a forthcoming period of overcapacity.

Right now there's no overcapacity, but the potash market is visibly softening. The current flurry to set new potash prices denotes intensifying competition; Duval recently instituted a special pricing schedule to induce buyers to stock up on potash during off seasons, and subsequent cuts of potash contract prices by other firms have tumbled the cost of agricultural muriate by as much as $1.25/ton.

Imports: Except for sporadic protests from some U.S. potash industry spokesmen, there's apparently no organized opposition to potash imports. The Administration, too, in its recently aired minerals program, passed off potash imports as relatively unimportant, requiring no special government controls. But in other ways, imports will become increasingly significant.

Canadian Potash: Stirring up much more interest, right now, is the activity in Canada favoring the development of what promises to be a "big time" potash industry in the province of Saskatchewan. Interest in the U.S. is heightened because the nearest, most promising market is the U.S. Midwest. Moreover, transportation costs from Canadian mines to consuming Midwest areas are about the same as the rates from Carlsbad to the same area.

The flow of potash from Canada to the U.S. is not, necessarily, a serious threat to all U.S. potash producers. That is not to say, however, that Canadian potash will not be a threat to some U.S. potash production. There's a difference.

Most of the Canadian potash exploration now in progress—or contemplated—is being done by top U.S. potash producers; the list reportedly includes nearly every plant in the Carlsbad area. If all succeed in establishing Canadian mines, each producer will, in part, compete with himself. Such competition would create no special hazards for the firms, financially; but it could create serious personnel problems at the Carlsbad mines. If, however, some U.S. producers are left out of the Canadian scene, the over-all competitive picture will obviously become far different.

Still another angle concerns exploration in the Saskatchewan area by other nationals. These include Canadians and at least two important German potash producers. Success of their projects may well lead to heavy competition in U.S. markets by foreign producers whose sources of potash will then be at the very doorsteps of U.S. buyers.

Expensive but Worthwhile: Canadian potash reserves are richer and far more extensive than those at Carlsbad; they are also more difficult to mine. Shafts must be three times deeper than at Carlsbad, and the cost of shaft-sinking is considerably greater than most producers originally supposed. Comments one expert, "These projects are not for little boys."

But the cost has not deterred vigorous development. Most active on the Canadian scene, right now, is Potash Company of America. The firm's Canadian subsidiary last month started construction of a $20-million potash refinery (reported capacity: 1.5 million tons/year) at Patience Lake, east of Saskatoon, Sask. Expected completion date is early '59.

According to latest reports, the firm has gone down about half the 3,000 ft. required. The operation is not cheap; a year ago, the company reported it had already put almost $5 million into the project.

Continental Potash Corp. Ltd. (formerly called Western Potash) holds a crown reservation of 100,000 acres and a CPR reservation of 20,000 acres in the Unity area of Saskatchewan.

Continental first made brine mining tests, found them impractical, and, in '52, decided to sink a shaft. By mid-'55, the shaft was down to the 1,170 ft. level (3,500 ft. required); in '56, the shaft touched artesian water sands, and freezing operations had to be employed to get through the troublesome stratum.

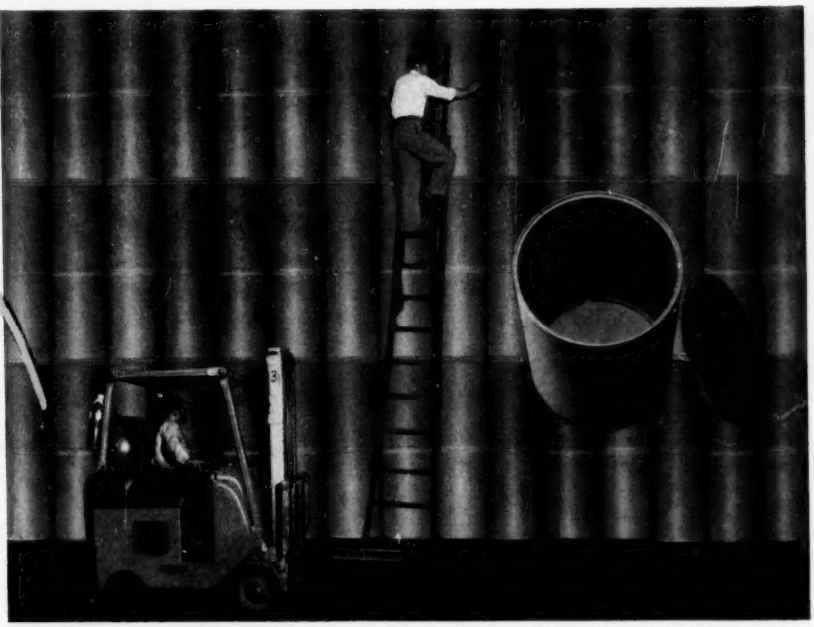
According to latest reports, the firm's progress is still on a touch-and-go basis. No completion date has been announced.

International Minerals & Chemical announced plans in May to mine potash at a 450,000-acre site in Saskatchewan. The schedule calls for construction of surface buildings by the

* The strong opposition by representatives of U. S. potash firms did not stem from a belief that the promotional program is unnecessary; on the contrary, potash producers keenly feel the need of more promotional campaigning. They balked only on the grounds that they already were financing similar programs handled by the American Potash Institute, should not be forced to contribute more to the Plant Food Institute program.

Problem:

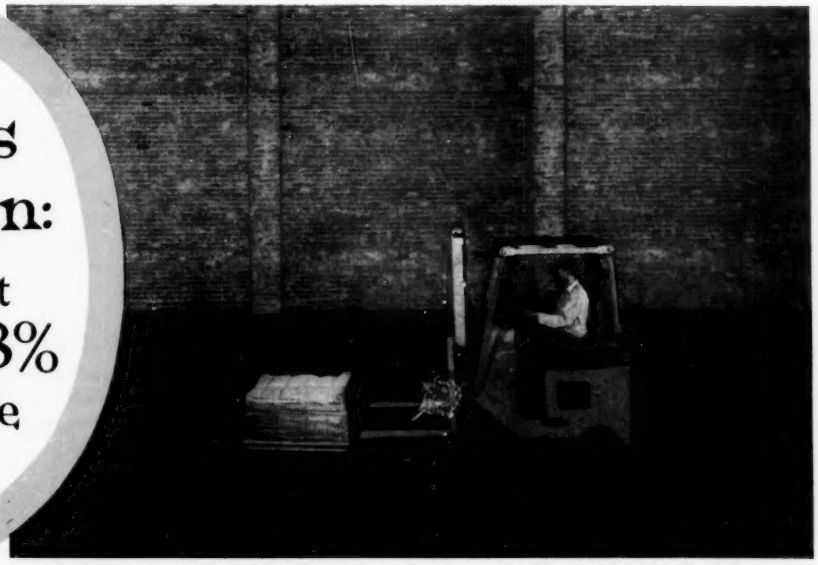
Empty containers that hog space



Have you realized how much valuable warehouse space is wasted in storing empty rigid containers? For instance, it takes 480 cubic feet to store enough empty rigid drums for packing 25,000 pounds of chemical fertilizer.

Fulton's Solution:

Bags that give you 98% more usable space



It takes only 11⅓ cubic feet to store 250 empty WPPL (Water Proof Paper Lined) bags, which will hold the same 25,000 pounds of fertilizer. WPPL bags provide moisture control of the packaged product . . . and are economical to pack, handle and ship.

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One pound Seqlene crystals (sodium salt) solubilizes in caustic solution 0.6 lb. $CaCO_3$ and over 3 lbs. Fe^{+++}. One lb. Seqlene 350D (35% aqueous sodium salts) costs only 12-13¢ a lb. Most other ions are also chelated. Seqlene Free Acid, 50%, is useful for acid cleaning and preparation of water-soluble salts. Seqlene is non-toxic.

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Present and indicated uses are alkali cleaning (including in the presence of phosphates), derusting, and paint-stripping; mercerizing, dye leveling, rayon spinning, kier boiling, washing woolens and cheese-cloths, tanning, in detergent formulations to prevent iron stains, cleaning of food equipment, inhibiting corrosion in water systems, in water-base paints, photographic baths, refining of fatty oils, electro-plating and others.

Technical bulletin, prices and samples are yours for the asking.

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LABORATORIES, INC.
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end of this summer and the speedy sinking of a mine shaft. IMC officials estimate that the firm's Canadian plant will produce potash at more than double the annual output at Carlsbad.

National Potash, a newcomer on the scene, even in this country, has barely had time to warm up its new plant at Carlsbad; nonetheless, the firm's spokesmen are already talking about joining the crowd up north.

Although the over-all U.S. competitive picture cannot yet be forecast with any great certainty, Canadian potash developments will bear close watching. Their ultimate impact on U.S. potash markets could be far-reaching.

Soil Bank: It will be at least another two years before the full effects of new U.S. and Canadian potash capacity will be felt by U.S. potash markets. Meanwhile, a problem of greater immediacy for U.S. producers of potash and other fertilizers concerns the fate of the Eisenhower Administration's soil bank program—in particular, the so-called "acreage reserve" part of the program.*

In mid-June, the Senate approved a $3.67-billion farm money bill that includes continued support of the soil bank program, then passed it back to the House, which had previously voted to kill the acreage reserve payments. The fate of the bill remains uncertain, but best guesses are that it will be continued for another year.

Senate and House conferees, in special committee last fortnight, voted to keep the program going for another year; but before their decision becomes final, the House must vote its approval of the committee action. Details of this action are not known at this writing, but are believed by Washington observers to be in line with the bill passed by the Senate.

It's now generally conceded that the soil bank program has fizzled; clearly, it has failed to accomplish the desired end of cutting crop surpluses. More than one-fifth of the nation's wheat acreage, for example, was withdrawn from cultivation, yet the prospective wheat yield is now estimated at only 2.7% less than the '56 harvest. This disappointing decrease was accomplished, according to one estimate, at a cost of almost $9/bushel.

Chances are that the program will be scuttled next year. What impact this will have on fertilizer sales is largely a regional matter.

How much effect the soil bank has had on fertilizer consumption in the corn and wheat belts isn't known for certain now; potentially, much more fertilizer could have been used to advantage, but fertilizer marketers doubt that farmers actually increased applications to boost yields on the smaller acreages.

In the Southern cotton and tobacco growing areas, the story is more clearly defined. The soil bank has significantly reduced consumption of fertilizers — including potash — because these crops regularly get the full amount of fertilizer recommended for top yields. More fertilizer per acre would not have increased yields.

Best results from intensive promotional campaigns can be expected in corn and wheat areas. But farmer resistance there may be much greater than fertilizer producers generally care to admit.

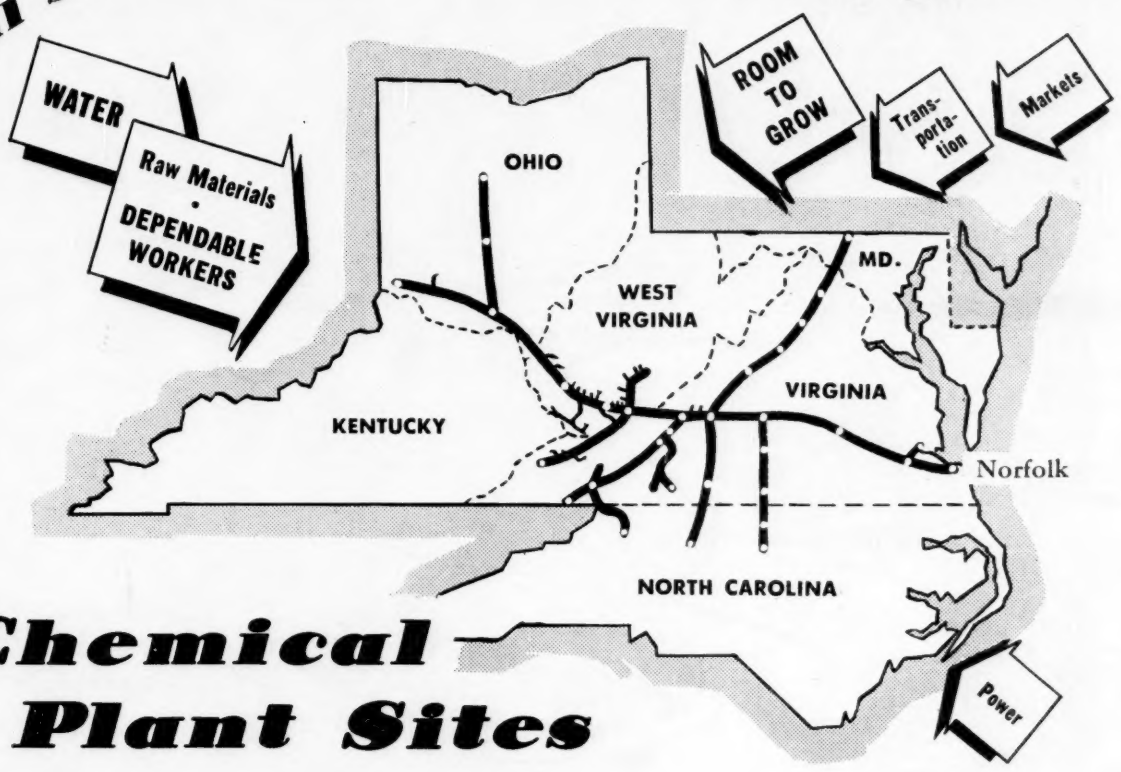
Some fertilizer producers aver that the nation's farmers have plenty of money and high credit ratings, can well afford to spend more heavily for plant foods. Farmers seem to think otherwise. The now unanswerable but vital question is: Can the farmer be convinced he's better off financially than he thinks he is?

The farmer is likely to point out that his problem is overproduction, not underproduction. The purpose of the soil bank avowedly is to cut crop yields, so why defeat this purpose by seeking heavier per-acre yields through increased fertilizer applications? And it apparently doesn't do much good to tell farmers that fertilizer can cut acreage under cultivation, promote big savings (especially on labor).

There's little to indicate that the farmer will, in the future, have any less resistance to these arguments for increased fertilizer use. Hence, potash producers—like all others in the fertilizer business—will undoubtedly be forced to seek other answers to the complex problems that collectively seem to be slowing down the growth rate of U.S. potash consumption. And the next few years will be the critical ones in which answers to the potash riddle must be found.

* The Soil Bank Act signed on May 28, 1956, consists of two parts: (1) the Acreage Reserve Program, which allows government payments for acreage reductions of allotment crops, i.e., tobacco, cotton, peanuts, rice and "commercial" corn and wheat; (2) the Conservation Reserve Program, which encourages the shift of less productive lands to trees or other permanent cover by payment of up to 80% of the cost of such conversion, plus a yearly land rental.

all signs point to The Land of Plenty*



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Raw Materials: Vast deposits of the world's finest all-purpose *Bituminous Coal. Limestone* in abundance . . . over 97 per cent pure calcium carbonate! *Manganese, silica, clay, brines* and other natural resources.

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POWER OR ECONOMY? Future cars will be designed to stress power or fuel conservation.

Either Way: No Letup in Fuels Research

The recent decision of the Automobile Manufacturers Assn. to soft-pedal speed and power in new auto advertising gave petroleum refiners and many chemical makers pause to ponder their own future course. Such a de-emphasis could end the race for higher-octane fuels, better lubricants and additives—a gigantic market involving 56 billion gal. of gasoline, 1 billion gal. of lubricants and additives; sales of lubricant additives alone are about $200 million.

For the present, at least, research in these fields will go on unabated. The latter opinion summarizes the stands of top automotive and petroleum research directors to whom *CW* talked this week. It's hedged somewhat by scattered indications that the power race may level off, turn into stress on the development of more efficient, more economical engines.

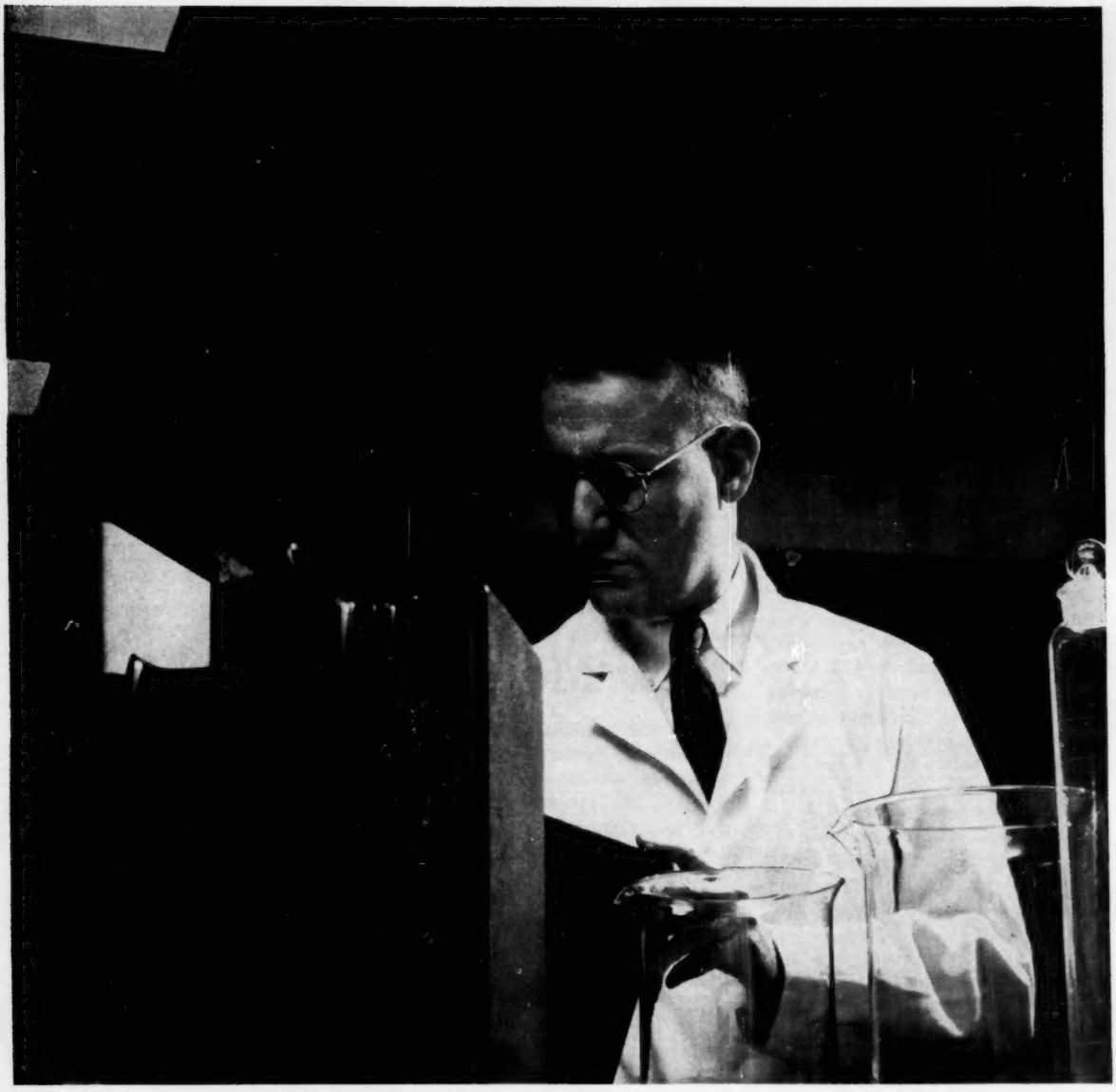
Ford and Chevrolet are already tooled up for more powerful engines next year. And Arthur Underwood, manager of research staff facilities at General Motors' technical center, says: "GM plans no change" in its petroleum research goals.

Oil and chemical companies with a big stake in such research aren't changing their plans, either.

Everett Hughes, Standard Oil of Ohio (Cleveland) research manager, says he is working on the premise that higher-octane fuels will be required by higher compression ratios in the future. But Hughes adds that the new fuels may go into engines that feature either speed and power, or safety and economy. "Increased compression ratios of recent years," he explains, "could have given 20% more in mileage. Instead, cars have taken most of the added benefits in power."

Humble Oil and Refining Co. (Baytown, Tex.) sees octanes rising, too, expects premium gasoline to have a 110 octane rating by 1960. Esso Research and Engineering Co.'s (New York) associate director, J. R. McNabb (products research division), expects the AMA announcement to have "only minor effects at the most on research plans."

Elaborating on this theme, The Texas Co.'s (New York) general manager, Wayne Kuhn, says Texaco plans to go ahead with more powerful fuels, because "a company can't afford to change unless radical new designs requiring different fuel properties come out of Detroit." Concurring: Shell Oil, Socony Mobil, Ethyl Corp., Standard



In every grade, he maintains an "A+"

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Of the various tests to which Dow quality control men subject Methocel®, a most important one involves a tube. The answers it gives assure complete uniformity of this Dow methylcellulose.

As Methocel is being processed, our technicians run batch samples through a capillary-type tube of the Ubbelohde Viscometer. Too fast? Too slow? (Too thick or thin?)

Rate of flow through the tube provides a simple-but-exacting test. And every Methocel grade (of which there are three in nine viscosities) must pass "Summa Cum Laude".

Of course, consistency is an inherent advantage of Methocel, for it's a *synthetic* gum. Thus, by exercising the proper controls and techniques in production, quality never varies. Result: In all types of products—from paint to shampoo—Methocel offers an unusual degree of viscosity control.

It's simple methods like this, along with those more complicated, that help make your chemical dollar worth more now and in the future . . . that assure you the same quality tomorrow as today. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. BD 838A-1.

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Oil of Indiana and Atlantic Refining (which, however, expects better engine efficiency and fuel utilization to come out of design changes such as fuel injection).

Hint of Change: In the wind, however, is the still-uncertain trend to increase engine thermal efficiency, level off power while increasing compression ratios and fuel octane ratings.

Ford's Donald Fry, director of engineering, has stated his belief that "American production of natural petroleum will peak out within the next 20 years, compelling a turn to substitute fuels and greater auto efficiency and economy."

He feels that "engine redesign, smaller cars (if the public will accept them), and the use of lower-octane fuels or no-octane fuels could double current miles/gallon performance."

A more immediate possibility was recently voiced by Ford's engineering research vice-president, A. A. Kucher. Says Kucher, "The need for fuel conservation is one of the important reasons why the auto industry is exploring the adaptability of gas turbines, free-piston engines and other heavy-fuel-burning systems for propulsion.

Fuel reserves could be extended 30-40% if more efficient engines can be developed." Advances along these lines made news last year (*CW, Sept. 1, '56, p. 76*).

But it's generally believed in the auto industry that it will be 8-10 years before either gas-turbine or free-piston engines appear in appreciable numbers. Even then, the new propulsion will be used mostly for sports cars and trucks. So researchers have plenty of time to switch emphasis from high-octane fuels to the lower-grade fuels that will eventually be required.

Meanwhile, petroleum companies are busy keeping up with fuel needs of the more than 8 million conventional engines turned out annually. They anticipate no problem in meeting the fuel requirements of the new engines that may come along.

So far, few auto men believe that compression ratios will climb much, if any, beyond 11.5-1. Even with that limited goal, fuel researchers have a tough job ahead. Still, talk of changing goals is giving them new perspective in what, until now, has been pretty much of a one-sided fuels research picture.

BRISTOL'S CHENEY AND DICKISON: For an old drug, a new outlook.

New Mental Drug in Mind

An "old" antihistamine, recast in the role of mental drug, has drug researchers wondering this week whether their scramble to synthesize and test new compounds is worth the effort. Rescreening known compounds, they conjecture, might prove equally profitable. The drug, phenyltoloxamine (dihydrogen citrate salt of 2-benzyl phenyl β dimethyl amino ethyl ether), is a good argument for rescreening, although not the first.

Reserpine, which sparked a whole new effort in re-evaluating drugs from plants (*CW, Nov. 3, '56, p. 104*), and iproniazid— originally tried as an antituberculosis drug and later found useful in relieving mental depression—are other examples of the advantages to be gained from reappraising known drugs.

Phenyltoloxamine has been marketed as Bristamin by Bristol Laboratories, Inc. (Syracuse, N.Y.), since 1949 (over the counter since '55) for the relief of allergies. Now, because of clinical findings that it is uniquely helpful to "hitherto unreachable" mental patients, the drug is available only on prescription (to prevent misuse), has been renamed PRN.*

At a recent meeting of the Mohawk Valley Neuropsychiatric Society in Marcy, N.Y., Anthony Sainz, director of Marcy State Hospital's psychopharmacological department, unveiled PRN's long-hidden powers. He reported on a study of 72 chronic mental cases (45-78 years old) of the type regarded in mental hospitals as "burned out." All had been institutionalized for more than 10 years. "Good" or "fairly good" results were obtained in 55 cases, or 76%.

Sainz points out that, while the drug does not alter the underlying psychosis of patients, it permits the return of those successfully treated "to response on a reality plane and restoration of habitual, learned procedures and patterns."

A feature of the drug, according to Sainz, is that although its action is similar to that of reserpine, it does not have the latter's toxicity and side effects (including depression, mental cloudiness, and confusion). He also reports "addiction and withdrawal symptoms have not been noted after six months' continued high dosage in certain patients."

Sainz's study covered 275 cases of various types of serious mental illness, indicates that the drug is safe at requisite dosages, overcomes drawbacks that have hampered the extensive or continued use of other potent tranquilizers such as reserpine and chlorpromazine.

Case History: First synthesized by

*Derived from the Latin *pro re nata*, which on drug prescriptions, means "take as necessary."

Using Salt Efficiently

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt

"Volumetric Dilution" Assures Highest Accuracy in Brine Make-Up

For years, the process of making dilute brine has required careful manipulation, frequent salometer readings, and close supervision. Today, however, dilute brines of any strength whatever can be made up quickly and accurately, by means of a system which gives consistently dependable results. This system, which uses International's Lixate Equivalent formula, is known as "Volumetric Dilution." It needs no trained technicians, a minimum of attention, and no salometer readings.

How "Volumetric Dilution" works. Since a dilute process brine can be considered a mixture of fully saturated brine and pure water, it is necessary in each case to know the ratio between these two components. This ratio can be quickly determined by means of International's Lixate Equivalent—which is essentially the amount of fully saturated brine needed to bring water to a brine of correct salometer reading.

The first step, after determining how much finished brine is needed, is to indicate this amount on the tank wall with a simple marker (cleat, nail, paint, etc.). Then, with International's Lixate Equivalent formula, the exact amount of 100%-saturated brine needed for the finished brine mixture is quickly computed. A second marker is then placed to indicate this lower level, and the tank is ready for the brine-dilution operation. Fully saturated brine is poured up to this lower tank marker, and water is added until the liquid level reaches the top marker.

For example: a tank is to hold a 10-ft. depth of 60° S. brine. To find exactly how much fully saturated brine should first be poured into the empty tank, the desired finished brine depth (10 ft.) is multiplied by the Lixate Equivalent (which, for 60° S. brine, is 0.5570). Answer: 5.57. In other words, fully saturated brine must be poured to a level 5.57 ft. above the tank bottom. When water is added to the 10-ft. level, the result is a supply of 60° S. brine.

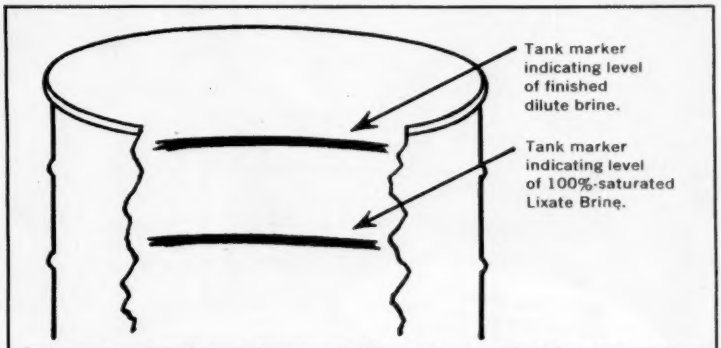
International's Lixate Equivalent formula works equally well when brine volume is measured in gallons. If a tank is to hold 500 gallons of finished brine, the amount of fully saturated brine needed is 278.5 gallons (500 x 0.5570). This amount of fully saturated brine when mixed with water, will make 500 gallons of 60° S. brine.

This system of "Volumetric Dilution" can be put into operation quite simply: 1. There must be a supply of 100%-saturated brine (which is made automatically in the Sterling Lixator). 2. The brine make-up tank, whatever its cross-sectional shape, must have vertical walls, so that the horizontal area remains constant. 3. Liquid level marks are needed on the tank walls.

Two of these requirements are part of every Lixate Brine-Making Installation. A supply of fully saturated brine is always on hand in the Lixator, and dilute brine can be made up in any existing brine storage tank. Thus the only necessary additions are the brine-depth markers on the tank wall.

"Volumetric Dilution," which gives such positive accuracy for such little time and effort spent, will work *only when the brine used is 100%-saturated.* If the brine is, for example, 95%-saturated, the Lixate Equivalent formula won't apply, and the finished brine won't have the desired strength.

There is a Lixate Equivalent for every salometer reading of dilute brine—from 1° S. (Equivalent 0.0083) to 99.6° S. (Equivalent 0.9945). To get Lixate Equivalent data, simply contact International. No cost or obligation.



Cutaway view of tank ready for accurate brine make-up with "Volumetric Dilution"

The most effective brine for accurate "Volumetric Dilution" is Lixate Brine—always fully saturated, always crystal-clear. This brine is made automatically, and self-filtered automatically, in the Sterling Lixator. The Lixator, which needs no attention, also stores both salt and brine. It is widely used today in plants of every type. There are many different kinds of Lixator installations—Storage Lixators, Silo Lixators, Sterling Model Lixators—in different designs and sizes to suit any plant layout.

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Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt you use. International produces both Sterling Evaporated and Sterling Rock Salt in all types and sizes. And we also make automatic dissolvers in metal or plastic for both kinds of salt. So we can recommend the type and size of salt most perfectly suited to your needs.

If you'd like the assistance of an International "Salt Specialist" on any problem concerning salt or brine—or further information on "Volumetric Dilution"—just contact your nearest International sales office.

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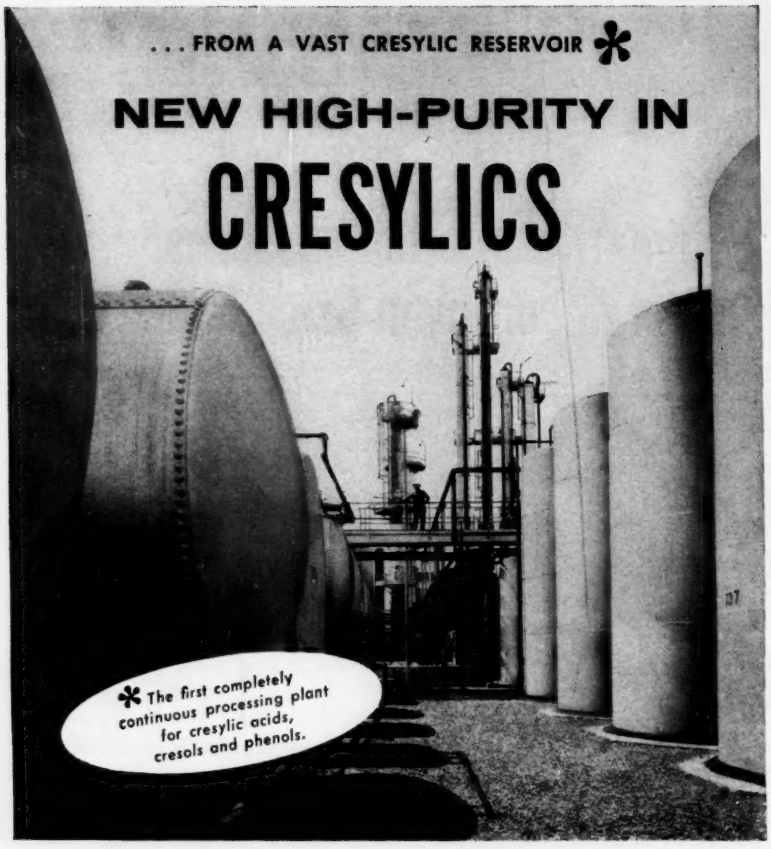
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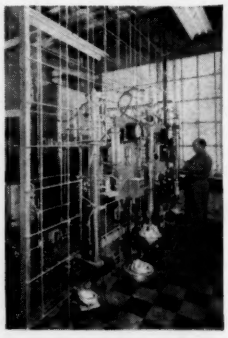

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RESEARCH

Lee Cheney, Bristol Lab's director of organic chemical research, PRN exhibited the usual antihistamine effects on the central nervous system (i.e., some sedation in high doses). Later, H. Leo Dickison, director of Bristol's pharmacological research and assistant director of research, discovered the psychopharmacological effect, sparked the drug's clinical evaluation as a potentially useful agent for treating psychiatric cases.

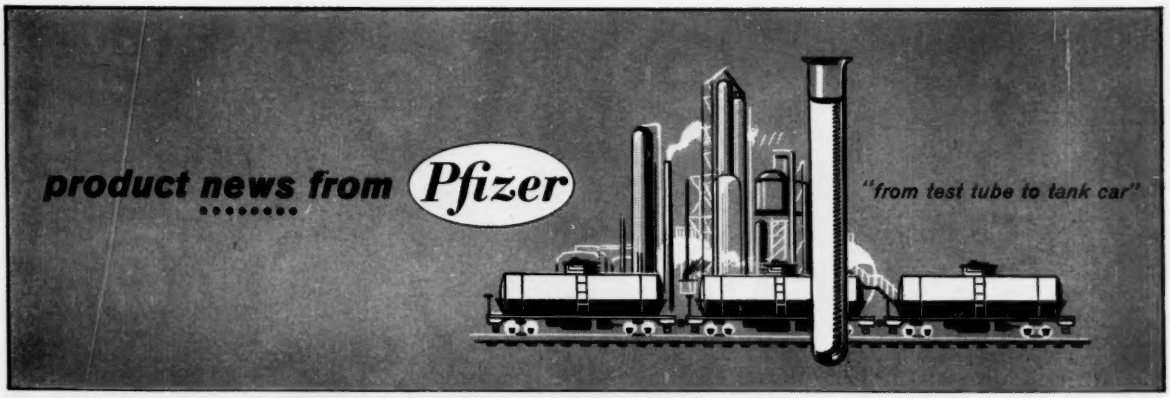
A. R. Menotti, Bristol's research director, sees the find as a strong argument for investigating the side effects of known drugs for possible new benefits.

But Menotti is fully aware that such rescreening could also prove expensive and fruitless. He points out that any one chemical structure could have a variety of activities and that these vary with dosage, that full evaluation of its properties could be a long procedure. Right now, there is just not enough knowledge to predict, without the empirical approach, whether some drugs now on the laboratory shelf may possess hidden benefits.

Meanwhile, even PRN is slated for more exhaustive testing. In a few cases, negative reactions have been observed. In two cases, of 35 trials at Metropolitan and Flower-Fifth Avenue hospitals (New York), the drug has had to be discontinued. But PRN's prospects—and the argument for rescreening established drugs—look good.

EXPANSION

- Lowell Technological Institute (Lowell, Mass.) has broken ground for $2,108,000 building that will house research facilities, classrooms, and laboratories for plastics studies and electronic engineering. Due for completion: Sept. '58.
- A $1.5-million development center has just been completed at B. F. Goodrich Chemical Co.'s Avon Lake, O., experimental station. About 100 staffers, headed by E. W. Harrington, will probe synthetic rubber raw material and chemicals, and resins at the new center.
- The Lasdon Foundation Inc. (Yonkers, N. Y.), will do basic biochemical research at its newly established Research Institute of Chemotherapy (Colorado Springs, Colo.). Laboratories, now under construction, will cost $500,000.

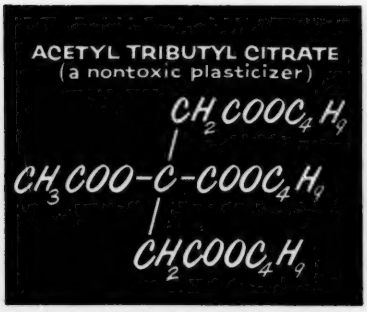


VERSATILE ORGANIC ACIDS AND DERIVATIVES AVAILABLE IN QUANTITY

Pfizer delivers to industry a number of useful organic acids... dependable, economical products of Pfizer leadership in the field of fermentation chemistry.

CITRIC ACID

Notable for its combination of nontoxicity and sequestering ability, citric acid will undergo a number of interesting chemical reactions. You can order Pfizer Citric Acid in both anhydrous and hydrous forms. Pfizer also produces both citric acid salts and esters in commercial quantities. Five esters include Triethyl and Tributyl Citrates, their acetylated forms and Acetyl tri-2-ethylhexyl citrate.



OXALIC ACID

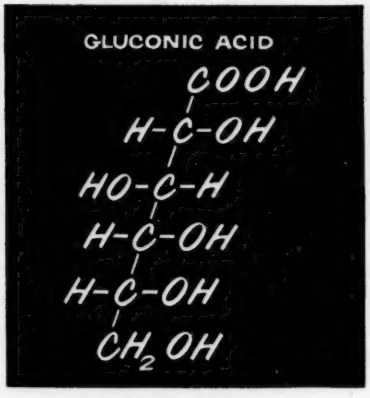
One of the important features of this strong acid is its ability to solubilize iron oxide. Two outstanding jobs done by Pfizer Oxalates are found in the production of blueprints that have sharp white lines and, most recently, in the production of colored aluminum that has uniform, light-fast, color. Pfizer Oxalic Acid is available in granular and fine granular forms. Available oxalates include ammonium, ferric, sodium and potassium.

TARTARIC ACID

High purity Pfizer Tartaric Acid offers both low toxicity and sequestering ability. Its salts find excellent use in metal plating processes.

GLUCONIC ACID

Gluconic Acid has a low order of toxicity, is extremely mild and noncorrosive and has excellent sequestering properties. Pfizer produces gluconic acid by the fermentative oxidation of glucose and offers it in two forms: as a 50 percent aqueous solution; and as a stable salt.

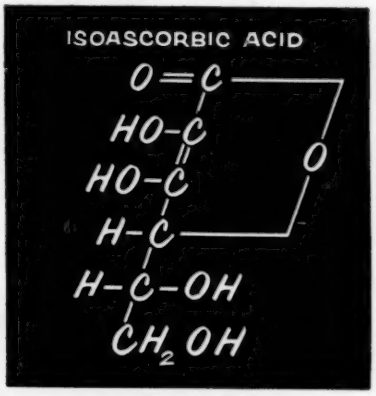


ITACONIC ACID

Pfizer skill in fermentation has made industrial itaconic acid a reality. Two carboxyl groups, a conjugated double bond and an active methylene group make itaconic acid a reactive and versatile molecule. Itaconic esters, readily prepared in high yields, can be polymerized and may serve as useful plasticizers. Polyesters of itaconic acid and glycols may be polymerized or copolymerized to hard thermoset resins.

ISOASCORBIC ACID

Isomerization has made ascorbic acid practical for industrial antioxidant uses. The isomeric form of ascorbic and its sodium salt offer the full antioxidant effectiveness of the U.S.P. products *at much lower cost.*



You can order versatile PFIZER ORGANIC ACIDS in large tonnages. If you want further information on any of them, write us outlining the type of application you are considering. Pfizer Technical Service can help you with extensive data on organic acids.

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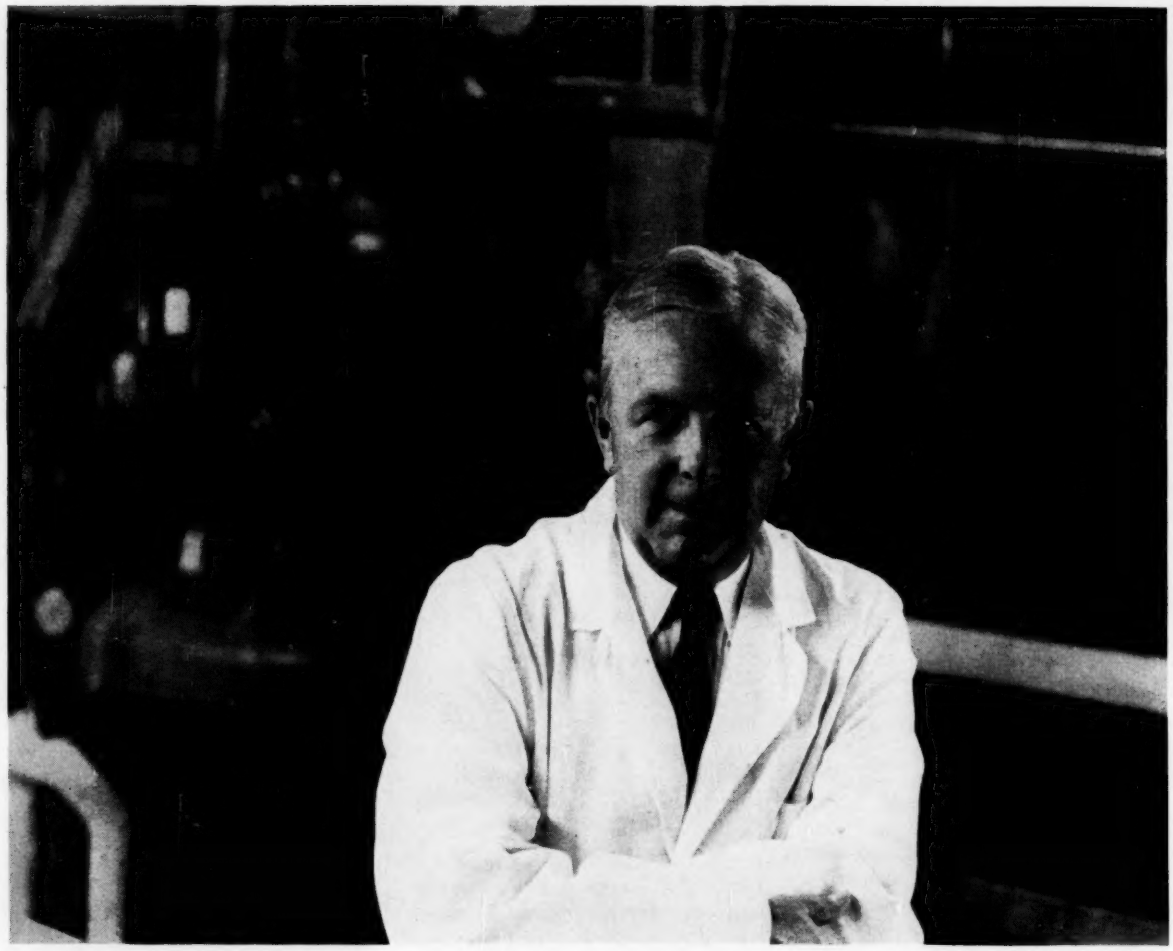

This man runs the only glycol dimethyl ether plant in U.S.

Clayton Parcels is in charge of Ansul's glycol dimethyl ether plant, the only one in the United States. His plant is running at full capacity because these unique solvents are playing a vital role in many new chemical processes.

Take the exciting things being done with metal hydrides, for instance. Sodium borohydride required a non-reactive solvent, so Ansul Ether 141 (dimethyl ether of diethylene glycol) was suggested. Now sodium borohydride can be used effectively as a reducing agent for aldehydes, ketones, acid chlorides, acid anhydrides—and most recently—in ester reductions.

Mr. Parcels would like to send you our new 27-page technical bulletin on the solubility and stability of commercially available hydrides in Ansul glycol dimethyl ethers. For that matter, he'd be happy to talk with you about any chemical problems that might require a specialized solvent. Write Clayton Parcels, ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN.

ANSUL

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Market Newsletter

CHEMICAL WEEK
July 13, 1957

U. S. Steel is becoming a more important chemical industry factor. Recent unveiling of the firm's $18-million anhydrous ammonia plant at Provo, Utah (*CW Market Newsletter, July 6*), can be considered a "guinea pig" for many other chemical ventures in the Midwest and the East.

U. S. Steel intends to become, as quickly as possible, an integrated producer of chemicals for direct sale to wholesalers, retailers, and manufacturers of chemicals and related products. It will compete actively with other firms that produce and market coal chemicals; for "Big Steel," it's a significant switch from being a relatively passive supplier to the chemical process industries of such items as benzene, toluene, etc.

At the outset, a spokesman emphasizes, U. S. Steel is going right down the line to the ultimate industrial and agricultural user of anhydrous ammonia, ammonium nitrate, nitric acid. Other products that could be made in the future include argon, urea, phenol, creosotes, and binders from coal tar.

•

Britain is removing import controls on more than 500 industrial commodities originating from the U.S., Canada and other dollar-area countries. The move will, according to Board of Trade president Sir David Eccles, result in less than $9 million worth of additional imports.

The new regulations, effective Aug. 1, will cancel controls on most raw materials of industry and metal semimanufactures, and from certain agricultural products and chemicals.

Goods that may be imported from any country, under open general license, include chemicals, drugs, medicines, dyes, colors and fertilizers; mineral products and metals; oils, waxes, gums, resins and perfumery materials; and paper materials.

•

On the list of about 200 chemicals: allyl alcohol; barium chlorate and nitrate; borax; boric acid; carbon blacks; chlorine; diisopropylamine; ammonium chloride, nitrate and sulfate; mineral phosphates of lime; compressed oxygen; magnesium chloride; a number of sodium and potassium compounds; argols; crude tartrates.

•

A wide variety of allied industries will also benefit from the relaxation of British import controls. Mineral products and metals affected include: abrasives (crude, ground or graded); agate; alloys of metals, unwrought (but excluding gold, silver, thorium, uranium); asphalt mastics and powder; boron minerals (crude) and concentrates of boracite and rasorite (kernite); cement (calcareous, portland unground); refractory cement; precipitated chalk; clay; dolomite; feldspar; metallic ores (concentrates and residues other than of silver, thorium, uranium).

Among unwrought metals (excluding alloys) are: antimony; bismuth; calcium; chromium; copper; gallium; germanium; hafnius; indium; iridium; lead; magnesium; osmium; palladium; platinum; potassium; rare earth metals, including scandium. (Excluded: cerium; rhenium; rhodium; ruthenium; sodium; tin; vanadium; zinc; zirconium.) Included are powdered metals, except cerium, gold, silver, thorium, uranium and their alloys.

Among oils, waxes, gums, resins and perfumery materials affected are petroleum bitumen; soap stocks; and waxes other than paraffin, polyoxyethylene and polyethylene.

•

Stop-gap buying of fluorspar and asbestos by the U. S. government will continue under a $6.7 million Congressional appropriation for purchase of defense-vital minerals. The final figure was agreed upon by Senate-House conferees after the House had refused three times to approve the Senate's $30 million appropriation.

The heavily reduced funds gave the nod to fluorspar and asbestos producers, but ruled out purchases of columbium-tantalum and tungsten. Conferees refused to include tungsten on the grounds that military needs for the metal over the next few years had been overstated.

•

Maleic anhydride capacity has been boosted 10% by Monsanto. The firm's total capacity for maleic—key ingredient in alkyd-based paints, coatings, polyester resin—is not revealed; however, total U. S. output prior to Monsanto's expansion was about 60 million lbs./year.

One big booster of maleic consumption is polyester resin production which increased from an estimated 27 million lbs. in '54 to 71 million in '56, and may climb to 90 million lbs. this year.

•

First production of petroleum sulfonates in Canada is scheduled to begin by the end of this month at the new unit constructed by Surpass Petrochemicals, Ltd. (Scarboro, Ont.). At start-up, the firm expects to have signed sale contracts for more than 50% of its primary capacity of 7 million lbs./year.

SELECTED PRICE CHANGES — WEEK ENDING JULY 8, 1957

UP	Change	New Price
Diacetone alcohol, acetone-free, dms., c.l., dlvd.	$0.005	$0.155
Ethyl acetate, syn., 85-88%, dms., c.l., dlvd.	0.005	0.15
Hexylene glycol, dms., c.l., dlvd.	0.005	0.175
Methyl amyl acetate, dms., c.l., dlvd., E.	0.005	0.17
Methyl ethyl ketone, dms., c.l., dlvd.	0.005	0.15
Methyl isobutyl ketone, dms., c.l., dlvd.	0.005	0.17
Sodium pyrophosphate acid, bgs., c.l., wks., frt. equald., 100 lbs.	0.25	11.10

All prices per pound unless quantity is stated.

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IMC's Procurement Manager Marek charts course in nationwide search for executive recruits as . . .

He Beats the Bushes for Management Men

Though chemical process companies are in "the business of the future," they'll have to put more pep into their executive procurement programs in order to get their share of top-talent management. That's the advice offered this week by Robert Marek, new manager of technical and management procurement for International Minerals & Chemical Corp. (Chicago).

His suggestions on attracting managerial personnel come in the wake of the recent disclosure that chemical companies have not been keeping pace with certain other industries in compensating their executives (*CW Report, Feb. 9, p. 51*).

IMC—one of the latest additions to the growing list of manufacturers that have set up executive procurement and development departments—has put Marek in charge of all managerial and technical hiring. Marek—a youthful-looking native of Cedar Rapids, Ia., and mechanical engineering graduate of the State University of Iowa—explains that he heads a sort of company-wide clearing house for procuring talent. Even when middle-level management men are hired directly through the personnel facilities of one of IMC's domestic or Canadian plants or offices, the applicant is cleared through the Chicago procurement office.

Method of Operation: Marek—who joined IMC in 1951 as manager of industrial engineering—has a detailed method of operation providing for all the phases of locating, interviewing, testing and hiring management and technical personnel. And throughout the entire procedure runs the theme: "Don't keep a man on the hook." Marek explains this philosophy by saying, "Fast action after interviews has often helped IMC get its share of good men."

A variety of sources are put into play by IMC in its search for suitable applicants, including the press, employment agencies, professional societies, consultant procurement specialists and personal contacts.

Once an applicant is located, he undergoes interviews, reference checks and thorough testing. These initial steps are standard in industry, Marek agrees, but he believes IMC is unique in the scope of its followup interviews.

During followup interviews, the IMC applicant meets and talks with many of the people with whom he will be working. In addition, Marek points out, in order to give the applicant a better insight into the company, he meets several vice-presidents and department heads other than those to whom he would report.

The followup phase of the procedure, IMC officials feel, while not foolproof, cuts down the margin of error by giving those most concerned with the prospect a chance to evaluate his personality and character. At the same time, the prospect has a broad opportunity to observe and evaluate IMC.

Nobody on the Hook: Once IMC

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Celanese now offers you a choice of three vinyl monomers for the development of better emulsion paints, adhesives, coatings, finishes, laminates, plastics and synthetic rubbers.

Celanese Vinyl Acetate, a truly versatile chemical, is the starting point in the development of a variety of end products, such as adhesives, textile sizes, protective coatings, sheets, film and extrusion molding compounds.

Celanese Vinyl Propionate copolymers offer promising applications in the fields of adhesives, emulsion paints, plastics, synthetic rubbers, protective coatings and finishes, chewing gum resins.

Celanese Methyl Isopropenyl Ketone, a new vinyl monomer, forms tough plastics in homopolymerization, and copolymerizes with many commercially available vinyls for use in plastics, films, elastomers and adhesives.

With the expansion of the Celanese development program to include **Acrylic Acid Esters,** Celanese will soon be in a position to offer you a broader range of monomers for your product development programs. Meanwhile, data accumulated by Celanese Research on Acrylic Acid Esters can be made available to you for use as the groundwork in your plans for the future. Also available from Celanese to help you in your planning are technical data sheets on Vinyl Acetate, Vinyl Propionate and Methyl Isopropenyl Ketone, specially prepared for your use by the Celanese Chemical Division.

Write: Celanese Corporation of America, Chemical Division, Dept. 652-G, 180 Madison Avenue, New York 16, N. Y.

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	VINYL ACETATE	VINYL PROPIONATE	METHYL ISOPROPENYL KETONE
	Descriptive Data	Descriptive Data	Descriptive Data
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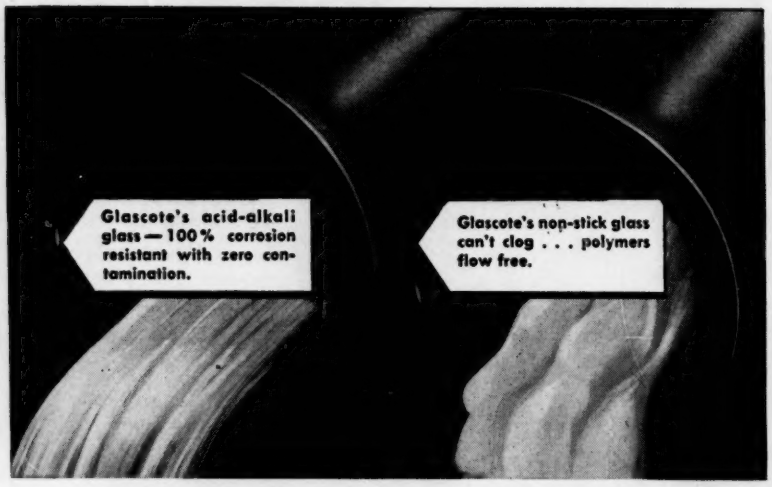
Color APHA, max.	5	10	water-white
Water, % wt., max.	0.15	0.15	1.5
Specific Gravity @ 20°/20°C	0.9330-0.9340	0.9170-9180	0.8555-0.8565
Acidity as acetic acid, % wt., max.	0.02	0.1	—

Celanese CHEMICALS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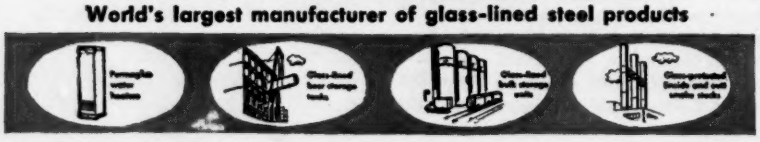

FAST ACTION: 'Once you decide on a man, don't keep him on the hook.'

decides to employ a prospect, it follows with fast action. In the job offer, all details are made clear, such as salary, vacation, moving arrangements and reimbursement for expenses incurred in the move.

"Vacillation (once a prospect is accepted) is unfair to the man," Marek stressed. "It irritates and demoralizes him and shakes his confidence in the company itself. And then there's the personnel man's constant concern that a competitor may beat him to the punch, if he fails to act within a reasonable amount of time."

Promotion from Within: Contributing to the success of IMC's management procurement program is the firm's policy of promotion from within. Marek firmly supports the policy and sees the day when his major efforts will be in a direction other than procurement. By that time, he reasons, procurement will no longer be a full-time job. Right now, however, he'd settle for a situation in which 80% of all position vacancies would be filled through internal promotions. He feels it's healthy for a company to integrate new skills and new blood into the organization by filling about 20% of new management positions from outside.

Advice on Procurement: As means of improving procurement programs, Marek suggests that companies develop and follow sound and tested procurement procedures, adapt mod-

CHEMICALS OUTLOOK

July, 1957

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

PROGRESS REPORT ON FLO-CHILLED CAUSTIC SODA

Last March, Wyandotte introduced Flo-chilled* Caustic Soda—a new, free-flowing grade of anhydrous caustic. It met with an immediate and enthusiastic response from consumers and distributors alike. Users report that the flowability and non-caking characteristics of Flo-chilled caustic make it especially desirable during hot, humid weather.

Numerous requests for Flo-chilled caustic samples and literature have been received, from both domestic and foreign sources. Particular interest has been shown by industries using automatic packing machinery.

Sales of Flo-chilled caustic have exceeded expectations. And reports coming in from the field indicate continued excellent consumer acceptance. However, in spite of this growing popularity, production of Flo-chilled caustic is keeping pace with the rising demand.

PRODUCTION OF GRANULAR CAUSTIC SODA INCREASED

Wyandotte has increased its production of granular caustic soda to meet the growing market demand for this popular particle size . . . granular caustic particles may be generally defined as passing through a 12-mesh screen and retained on a 20-mesh screen.

Manufactured under rigid specifications, the granular grade has a minimum amount of dust, good flow characteristics, and a uniform particle size. It meets the package requirements of formulators and repackagers.

Granular caustic is available in 450-lb. drums, including our well-known open-head drum. Samples and further information are available upon request.

NEW INFORMATION ON QUADROL AVAILABLE

A new technical data sheet is now available covering Quadrol®, Wyandotte's trademark for N,N,N',N',—tetrakis (2-hydroxypropyl) ethylenediamine. In addition to physical properties and toxicity data, the data sheet contains a new section discussing the applications for this versatile chemical . . . such uses as polyurethanes, cross linking, esterification, chelation, and epoxy resin curing. The heat stability and hygroscopicity of Quadrol are also reviewed.

Quadrol is available in drums and tank-car quantities. For a copy of this new data sheet, or for samples of Quadrol, write to Department CO on your company letterhead.

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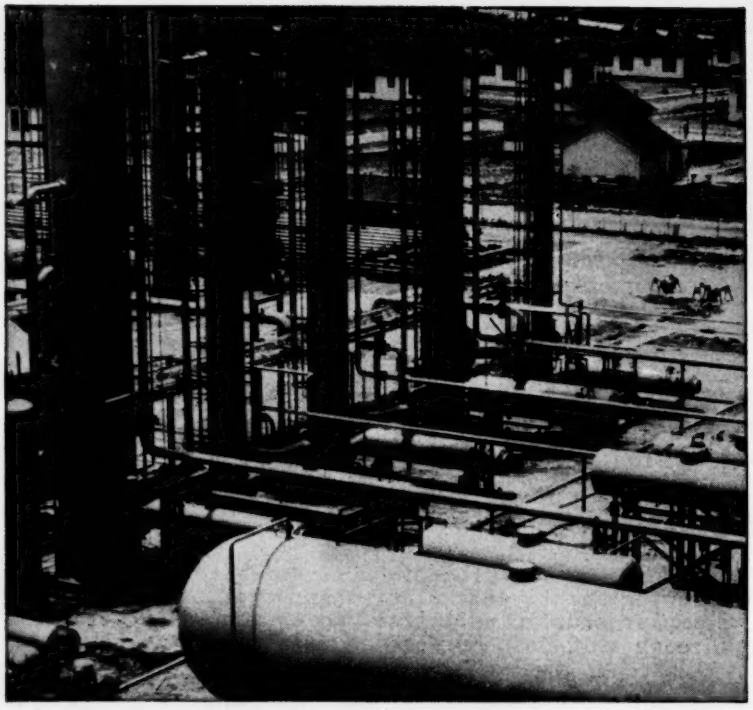

Federated lead products are the most economical and efficient protection against acids and caustics.

They are less expensive to use because the metal has a high resale value as scrap.

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ern screening techniques, make certain they are offering attractive salaries and fringe benefits, and make good use of public relations and publicity programs.

Interviewing itself is considered by many firms as the necessary foundation to any good procurement program. "Holding a job interview," IMC general managers and department heads are told, "is one of the more complex assignments in the whole field of communications. It involves listening and selling, as well as telling and buying." This same idea has been accepted by other firms and passed along to recruiters (*CW, April 6, p. 66*).

"The prospects are bright for attracting talented young people to the industry," Marek believes, "because the chemical business has romance, it's challenging and interesting, and it's rewarding financially. It's the business of the future, and we're bound to attract a good share of available young people."

IDEAS

Staff Department Branching Out: The law department of Standard Oil of Indiana has opened a branch office at Kansas City. It's part of a decentralization program under which legal services for the company's operating departments will be handled at field locations. Vice-president and general counsel, Thomas Sunderland, says additional branch offices in other cities are under consideration.

•

Civic Cooperation Extolled: Community service—rather than conventional publicity techniques—is what makes friends for a company, say public relations executives polled recently by the American Management Assn. Most frequently mentioned activity that wins community acceptance for a company: encouraging executives to take an active part in civic affairs through such local organizations as library boards, chambers of commerce, Red Cross and Community Chest committees, school boards, planning commissions, and community improvement groups. Next in line: charitable contributions and scholarship awards. For example, a large chemical manufacturer pledged $93,000 toward new facilities for community youth centers, thus spearheading a successful $1,250,000 drive.

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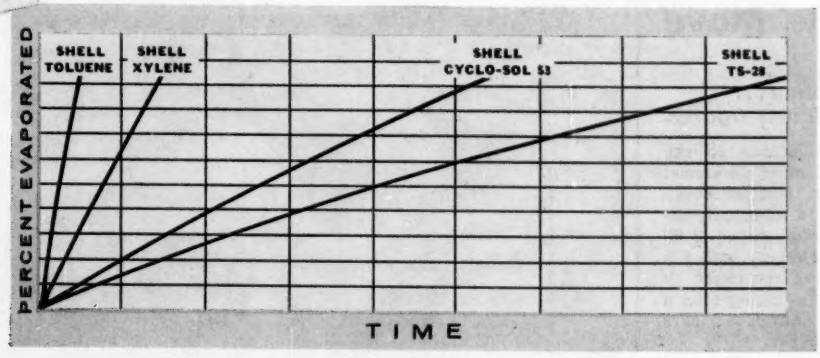

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This popular booklet points up the important sales problem of personnel turnover in industry. Out of every 1,000 key men (over a 12-month period) 343 new faces appear . . . 65 change titles . . . 157 shift . . . and 435 stay put. These figures are based on average mailing address changes on a list of over a million paid subscribers to McGraw-Hill magazines.

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SUMMER SCHOOL: College instructors in class at UNC's chemistry institute.

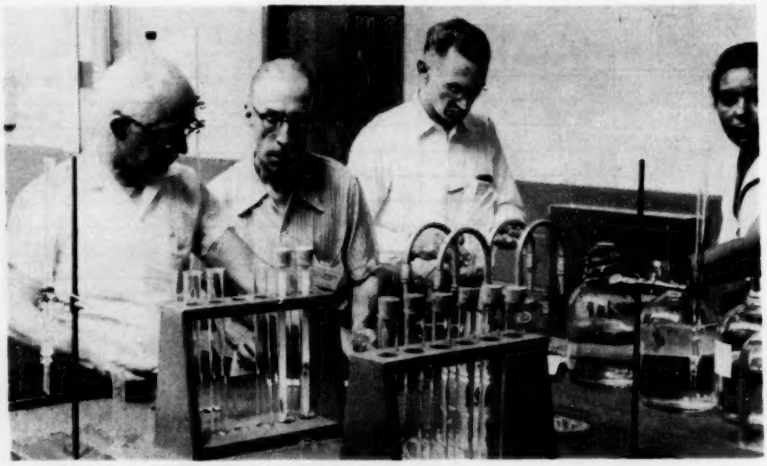
Teachers Go to School Again

With schools now closed for summer vacations, thousands of high school and college science teachers this week are flocking to college campuses and industrial plants for the annual industry-education cultural exchange.

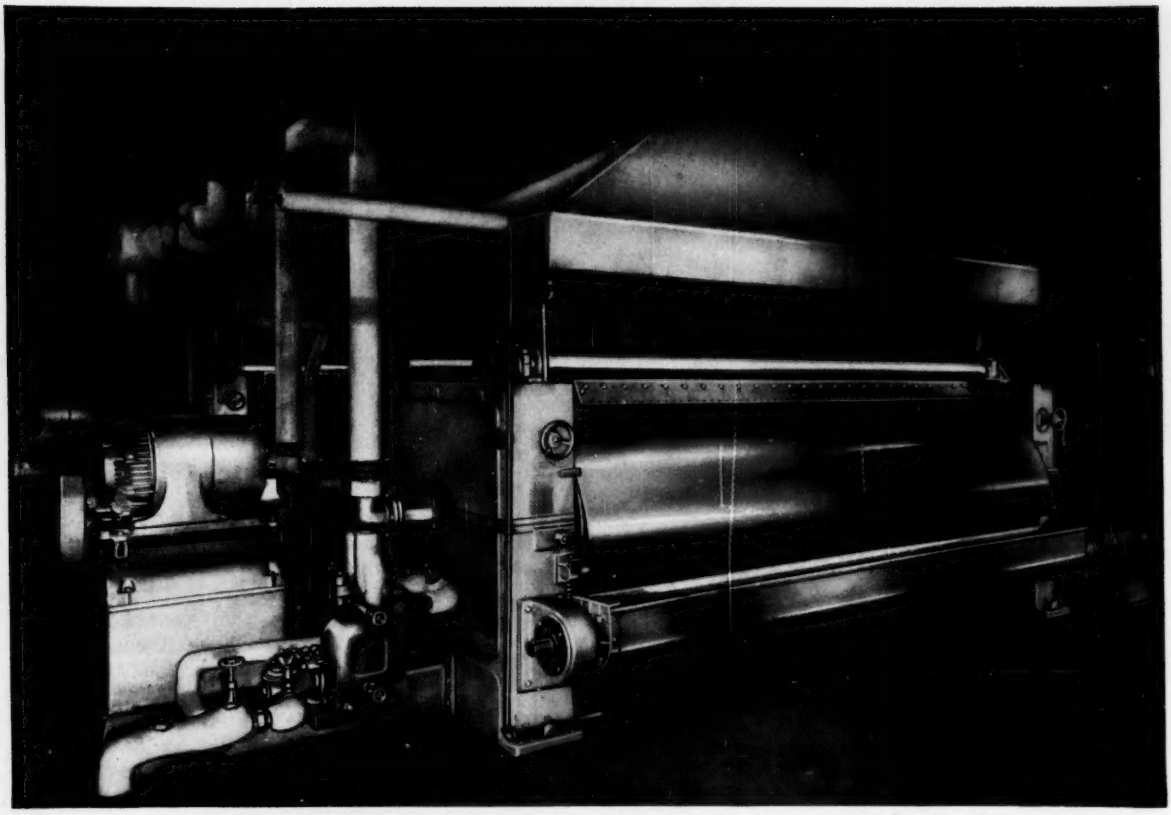
Already under way are three such summer institutes at widely separated points across the nation. At the University of California's Berkeley campus, more than 200 senior and junior high school teachers will spend two months as students of the University's Summer Institute for Teachers of Science. At Detroit, 23 faculty members from 20 colleges and universities throughout the country are taking part in the sixth annual General Motors Conference for Engineering and Science Educators. And at the University of North Carolina (Chapel Hill, N.C.), 55 participants from 24 states are attending the fourth Chemistry Institute for College Chemistry Teachers.

At Berkeley—where the program is financed by a $250,000 National Science Foundation grant—205 teachers are attending classes in biology, chemistry, physics and mathematics taught by faculty members, including Glenn Seaborg and other Nobel prize winners.

During the final two weeks of the institute—scheduled to run through



LAB WORK: Participants at UNC's institute go back to the benches.



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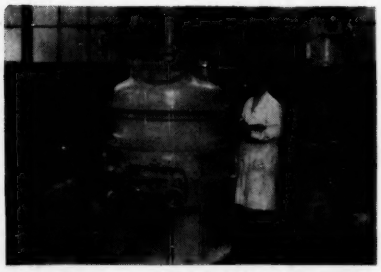

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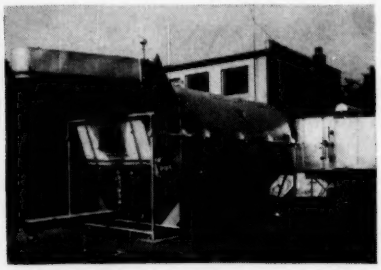

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mid-August—participants will take 10 credit hours of specialized work in chemistry, physics or biology. Classes will be staggered in order that more ambitious students can take all three.

Exchange of Viewpoints: The GM conference—running through July 23—is designed to provide engineering and science educators with a closeup view of how science and engineering skills and knowledge are used in research, product development and production operations. In addition, GM personnel are expected to benefit from a better understanding of educational problems inherent in training future engineers.

During the GM conference, educators will attend meetings with executives at various GM installations. Later, participants will be given field assignments with various divisions, followed by a general question-and-answer session at the company's Warren, Mich., Technical Center.

The UNC institute is sponsored by NSF and the Division of Chemical Education of the American Chemical Society, and, like the Berkeley session, is financed by NSF. In all, an estimated 4,500 high school and 250 college science and mathematics teachers will study this summer under NSF grants totaling $4.8 million.

Objective of the Chapel Hill institute—which runs through July 20—is "to bring teachers into personal contact with highly productive scientists who comprise the staff of the institute, with the view of stimulating interests and increasing their professional prestige."

The institute is administered by faculty members of the university, and is directed by S. Y. Tyree. Fifteen outstanding lecturers have been obtained for discussions, including Willard Libby of the U. S. Atomic Energy Commission.

Field trips to places of chemical interest have been arranged, including a visit to Du Pont's Kinston plant.

LEGAL

Cortrophin Patent Suit: The U. S. Court of Customs and Patent Appeals (Washington) has turned down Armour & Co.'s appeal for a ruling against Organon, Inc.'s (Orange, N. J.) trademarked cortisone product, Cortrophin.

By a 3-2 vote, the patent court upheld a previous decision of the as-

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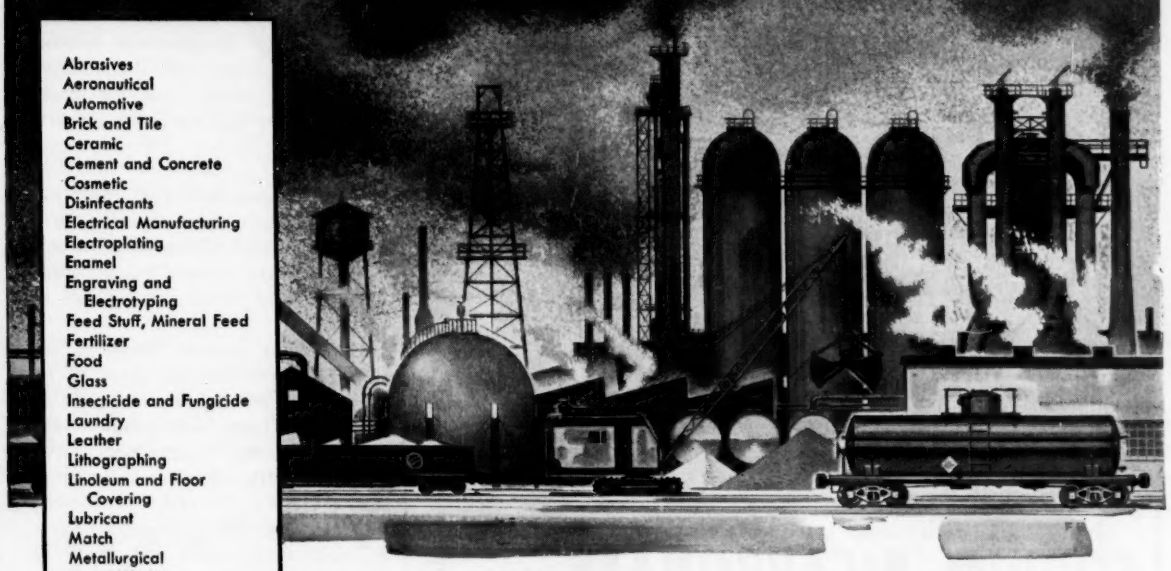

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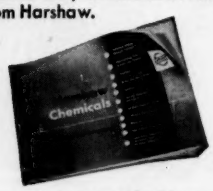

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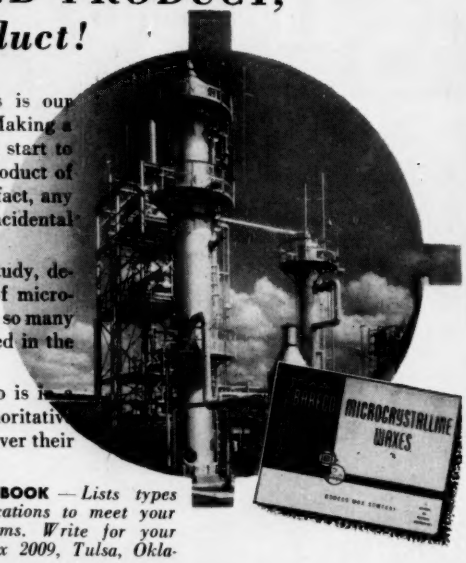

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sistant commissioner of patents, who overruled an earlier decision by an examiner supporting Armour and denying Organon's patent.

Chief Judge Noble Johnson and Judge Ambrose O'Connell ruled in the most recent decision that Organon is entitled to register Cortrophin because it is not descriptive—in the legal sense—of the generic substance, corticotropin, from which it's made. Judge Giles Rich concurred.

Johnson held that the trademark could damage Armour—as Armour previously claimed—only if it were descriptive, in which case the name would not be registerable in the first place.

•

Gas Monopoly Suit: Two stockholders of Northern Illinois Gas Co. have brought a $22.5-million antitrust suit in U. S. district court (Chicago) alleging monopoly of the gas industry in Chicago.

Defendants include People's Gas Light & Coke Co. and three of its subsidiaries: Natural Gas Pipeline Co. of America, Texas Illinois Natural Gas Pipeline Co. and Chicago District Pipeline Co. A fifth defendant is Northern Illinois Gas Co., formed by Commonwealth Edison Co.

The plaintiffs assert that, in 1948, People's Gas began a program to monopolize transmission and sale of natural gas into the Chicago area. The suit says Northern Illinois stockholders suffered losses of $7.5 million from the alleged conspiracy.

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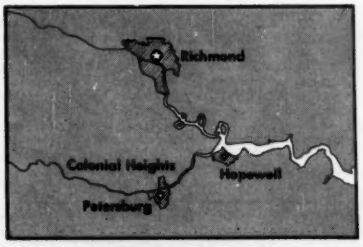

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LABOR

Job Training—Few actions of immediate consequence to chemical companies in the U.S. were taken at the International Labor Office meetings that ended last fortnight in Geneva, Switzerland. So far, no dates have been announced for the fifth session of ILO's Chemical Industries Committee. Highlights of last month's 40th annual International Labor Conference:

• The report by Director-General David Morse on ILO's 1956 activities, including technical assistance in vocational training and industrial productivity in 55 countries and studies on labor and social implications of automation and atomic energy.

• Preliminary approval of a draft treaty to wipe out job discrimination, setting standards for fair employment principles and practices. This draft treaty will come up for a final vote at next year's session, following receipt of comment from any or all of the organization's 78 member nations.

• Adoption of a convention outlawing slave labor, passed by a 240-to-0 vote with one delegate—Cola Parker, representing U.S. employers—abstaining. This convention now will be submitted to member nations' governments for possible ratification.

•

Squabbling Season: Weather and tempers have been hotter lately. Among recent tiffs in industrial relations:

• Faced with a move by the National Labor Relations Board for an antipicketing injunction, Teamster Local 118 has agreed to stop its "roving picketing" tactics, but will continue to post pickets at the Scobell Chemical Co. plant in Rochester, N.Y. The union is demanding recognition as bargaining agent for 13 drivers and warehouse men. The company's request for a representation election was denied by NLRB. Since then, according to the labor board's regional staff, Teamster union pickets had followed Scobell delivery trucks and picketed the firms receiving Scobell goods. NLRB charges that this was a violation of the Taft-Hartley law's ban on secondary boycotts.

• In U. S. district court at Tampa, Fla., 71 employees of Victor Chemical Works' phosphate plant at Tarpon Springs are suing for an aggregate of $30,000 assertedly due them for overtime work during the past two years and for an additional $30,000 as liquidated damages. The petition alleges that the company wrongfully deducted 30 minutes from each employee's daily time cards and that they should be paid at overtime rates for this time, used in required activities such as showering and changing clothes.

• At Cincinnati, the U. S. Court of Appeals for the sixth circuit has upheld last year's NLRB decision in the controversy between Union Carbide's National Carbon Co. division and the Oil, Chemical & Atomic Workers (AFL-CIO). The company had challenged the union's status as collective bargaining agent for employees at National Carbon's Edgewater Works (Cleveland), questioning whether OCAW—formed by merger in 1955—had the right to take over the Edgewater bargaining rights for which a predecessor union had been certified. The circuit court ruled that the board was correct in recognizing OCAW as successor to the old Gas, Coke & Chemical Workers union.

KEY CHANGES

Harry C. McKenzie, to member of the executive committee; and **Foster B. Whitlock,** to president, Ortho Pharmaceutical Corp., affiliate; Johnson & Johnson (New Brunswick, N.J.).

A. Wayne Elwood, to president, FMC International, division of Food Machinery and Chemical Corp.

William J. Meinel, to director and member of executive committee, Smith, Kline & French Laboratories.

Alfred T. Zodda, to vice-president—operations, Olin Mathieson International Corp., division of Olin Mathieson Chemical Corp.

William H. Winfield, to vice-president, International Division, Allied Chemical & Dye Corp.

Robert P. Obrecht, to director of the Richmond, Calif., research laboratory, Stauffer Chemical Co.

George W. Wunder, to manager, Nuclear Metals Division, National Lead Co. (New York).

Raymond C. Dosta, to treasurer, United States Borax & Chemical Corp.

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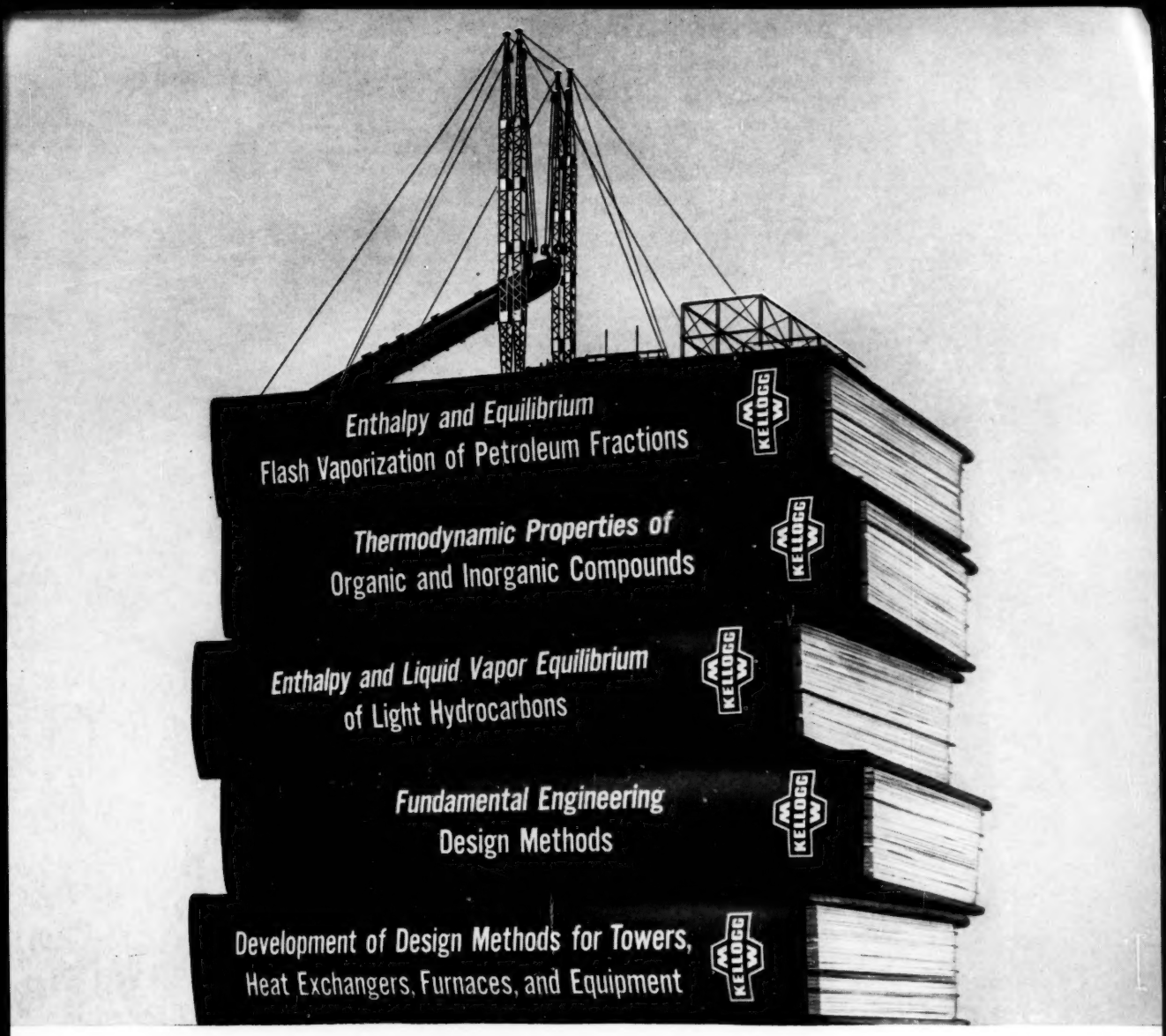

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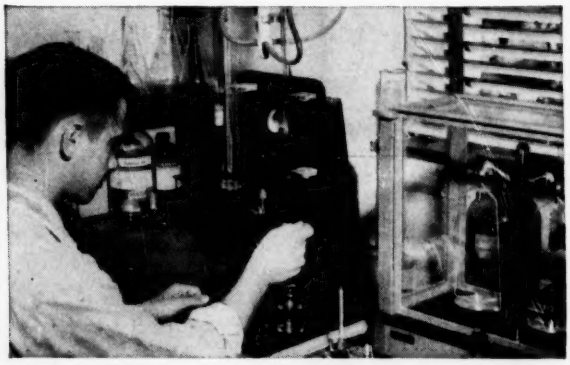

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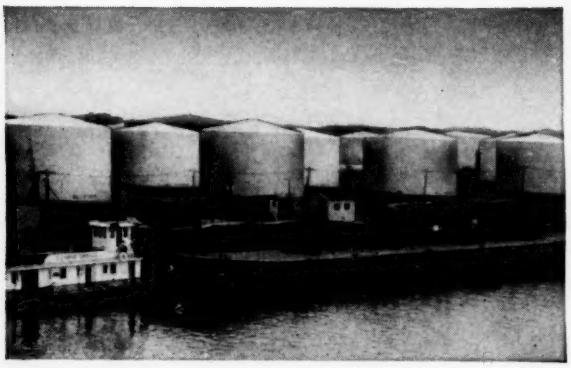

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